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St. Louis Meeting Shows Industry Improving

THE local men, under the chairmanship of W. H. Sawyer, who looked after the arrangements for the Midyear Meeting and dinner at St. Louis on March 4 are to be congratulated for their part in the success of the gathering. No pains were spared in working out detail plans to meet every wish of the delegates. To them also goes a large part of the credit for bringing together so large an attendance. The business meetings were well attended, and places were set for 769 at the banquet. A good spirit of optimism prevailed, and one could sense among railway men a widening feeling of certainty as to the course to be taken in the future and confidence in the ultimate results. The days of floundering and uncertainty and poor management are rapidly passing, and the condition of the industry reflects it. And naturally there is a happier air at the conventions, for gloom has been dispelled. All that is needed now is much hard work, for the course is charted and the way is clear.

Traffic Relief Work Given Impetus at the Midyear Meeting

PROBABLY the most profitable session of the St. Louis Midyear Meeting was that devoted to the discussion of street congestion and the means of bringing relief. The subject was treated from a viewpoint much broader than the direct interest of the electric railway, for any substantial measure of relief can come only through effort directed toward considerations many of which are quite apart from the direct operation of the railway. In fact, the problem is so broad in its scope and the railway man's interest is so important that he will in future have to take a very active part in city planning work if he fulfills his obligations to the car riders and his company.

The papers and discussion on the subject presented at St. Louis and printed elsewhere in this issue bring out nearly every angle of the problem and offer many suggestions for relief. Not all of these are in agreement. But there was unanimity of opinion that parking in downtown streets must be totally prohibited. Parking is not only one of the worst causes of congestion and there is the least justification for it of any of the causes, but its elimination is the most readily available measure of relief. At present we are making a very improvident use of streets, as their entire width should be devoted to the use of moving vehicles and not in large part for storage which benefits the few while penalizing the great majority.

There was also agreement that the height of buildings in business districts should be restricted in order to avoid further overloading of the street space. This would tend to bring about decentralization, and unless this is accomplished cities will strangle themselves in business development. While decentralization is certainly desirable from a traffic standpoint, none of the speakers mentioned the economic advantage of the concentrated business district in the general transaction of business. This is the reason, of course, for concentration. But it is rapidly reaching the point in most of our larger cities where street congestion is becoming the controlling consideration.

Decentralization is actually taking place already. The logical decentralization plan is to move business out by trades and centralize by trades in separate sections. This process has been going on in some cities, notably New York, and a desirable feature of this is that it not only relieves congestion and makes possible faster street car operation but it means more off-peak riding and better spreading of the peak riding over the railway system.

Parking abolition and building height limitation were considered the primary steps to be taken. They should precede the building of subways, double-deck streets, elevated and depressed sidewalks, etc., which tend to pyramid the problems both physically and financially.

To emphasize again the importance of railway men taking part in the broad planning for relief of street congestion, it may be said that while they are only indirectly interested in some of the planning, they will directly profit or suffer by the success or failure of the broad relief plan considered as a whole. The St. Louis session has undoubtedly served to give the study of relief measures a great impetus among railway men.

Be Sure to Have the Right Picture on the Screen

WHO has not seen the discomfiture of a lecturer who was illustrating his talk by lantern slides when he suddenly turned around and discovered that the picture on the screen was not the one he had been talking about? This is similar to a pitfall into which some unwary electric railways occasionally stumble.

It is undoubtedly desirable for the railways to give the widest possible publicity in their various communities to the improvements being made in their equipment and to the quality of service they are rendering. But in so doing care must be exercised to avoid attracting the attention of the public to conditions which in reality are not as described—boasting about something that isn't so.

An instance can be cited where a railway was spending considerable sums of money for publicity to tell the public what was being done to make the service convenient and attractive. Yet on the same day that the company was "boasting" of the quality of its service it happened that a package-express car was dispatched from one terminal of an important interurban line

immediately ahead of a limited passenger car. The package-express car was heavily loaded and was unable to maintain a high speed. It dragged along in front of the limited and caused the latter to reach its destination five minutes late. As a result several passengers missed a railroad connection.

"So this is what the traction company calls giving service," remarked an irate passenger.

Such an occurrence goes to show the importance of accuracy in publicity work. Be sure the right picture is on the screen. Get the standard of service up first, then tell the public about it. And keep telling the public about it, for this tends to keep the men on their toes to live up to the advertising. It works both ways.

Detroit's Articulated Train Is a Progressive Experiment

DETROIT'S new articulated train, described in this issue, is a good example of a type of pioneering valuable to the electric railway industry. This train incorporates in its design a number of ingenious construction features and represents a unique development in rolling stock. The officials of the Department of Street Railways of Detroit, together with the manufacturers, are to be congratulated on their vision and courage in having a unit of this much-talked-of type built so that its practicability may be determined.

Now that the first unit has been placed in operation, one is naturally led to consider both the advantages and limitations of this type of vehicle for city street service. Its size makes a permanently coupled train of this type suitable for only the heaviest traffic conditions. On only a limited number of streets in only the largest cities are such traffic conditions found outside rush hours.

In Detroit there are several unusual factors that appear to favor such a unit. These include the practice of staggering industrial hours and the peculiar features of Woodward Avenue traffic. This street is unusual in that there are three distinct heavy loads per day from the Highland Park plant of the Ford Motor Company, in addition to the ordinary morning and evening downtown business district load. In most other cities, even on streets that have unusually heavy traffic, economical operation of so large a unit during the rush hours would result in objectionably long headways.

Although a considerable saving in weight, first cost and operating cost is shown for the articulated train by the figures compiled in the Detroit analysis, it is too early at this time to know whether the unusual conditions on Woodward Avenue are such as to make the articulated three-car train suitable for all-day service. From the fact that the calculations in the article are based on utilizing the existing type of motor-trailer trains to carry the base schedule, it may be assumed that there is some question as to whether, even on this unusual street, the new articulated train is not too large for other than just "tripper" service. If this is the case, the analysis of costs, to give a true picture of the whole problem, should also include in favor of multiple-unit equipment the economies to be derived by the use of equipment adapted to all-day operation, thus retiring the older and less efficient equipment to rush-hour operation only. On the principle of putting one's best foot forward, there is also to be considered the favorable effect on the public of having the most modern and best-looking equipment in service throughout the day, and operating the more or less obsolete looking equipment only when required in rush hours.

Articulated Unit May Have Field on Interurbans

THE previous editorial outlines the principal limitations of the articulated train in city service. It would seem that we cannot look for a widespread use of this type of equipment in such operation. It may be, however, that the articulated train can be advantageously used in interurban service. A feature of the train which was particularly noticeable in the run made under its own power from Cincinnati to Detroit was its excellent riding quality. This characteristic was the subject of much favorable comment by many of the sixty railway men who made the trip. As pointed out by Mr. Colby, in the article in this issue, the result is attributable to the elimination of overhang at the adjacent ends of the connected cars. In view of this feature, such a unit might be used in high-speed service, and it makes for a substantial saving in weight as compared to ordinary cars in trains.

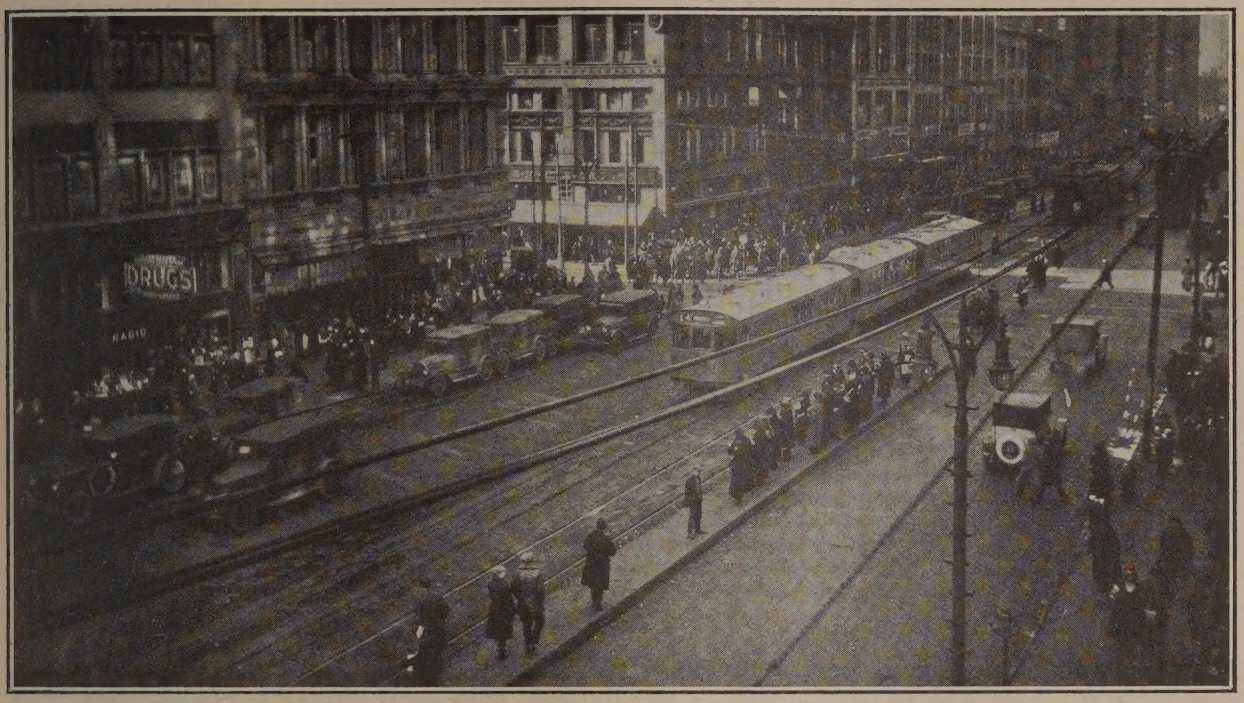
In addition to the improved riding qualities, the new vestibule design gives a satisfactory construction for affording safe communication between cars on roads having curves of comparatively short radius. This was of particular interest to the interurban men who made the trip, because of the possibility for equipping a unit of this type to give a combined coach, diner and parlor car service.

The Annual Blast in Washington

NEARLY every year the local electric railways in the District of Columbia are subjected to a legislative lacing. Civic affairs there are under the supervision of a committee of Congress, and the legislators, convened from all sections of the country, appear to take special delight in picking upon the railways. In years past they have found fault with the service. They have urged the consolidation of the principal operating companies, just as if the controlling interests in the properties were not astute enough voluntarily to bring about such a consolidation if a basis equitable to both could be found. Last year they sought elimination of one-man operation of cars. Now, the legislators want fares reduced to 5 cents. To accomplish this, they would abolish the local utilities commission.

It matters nothing to the legislators that the facts with respect to the local companies are all contained in their annual statements and in the reports and accounts of the operations of the companies made by the Public Utilities Commission. As politicians the legislators are more interested in factors than they are in facts. In politics, whatever is done must be done while the tomtoms beat. Even the dabbler in civic affairs knows that the public often accepts semblance for the substance.

Of course the members of the committee would deny that their intent is destructive, but about the only things that the committee does by such agitations is to destroy the confidence of the public in the local public service commission, affect the credit of the railways by causing an unwarranted degree of anxiety among the holders of the securities of the companies, and prevent the officers of the companies from functioning to their best ability by dissipating in no inconsiderable measure energies that might better be directed to constructive effort, and would be so directed if the members of the committee would only look upon the railway business as they do upon their own private business.



The Train Was Placed in Service on Woodward Avenue the Day After It Arrived from Cincinnati Under Its Own Power

Three-Car Articulated Train for Detroit

Many Unusual Features of Design Are Incorporated in This Initial Unit —The Seating Capacity Is 140 Passengers—Articulated Construction Reduces Weight and Cost and Also Gives Improved Riding Qualities

By A. C. Colby
Superintendent of Equipment, Department of Street Railways, City of Detroit

THE Department of Street Railways, City of Detroit, has recently placed in operation on the Woodward Avenue line a three-car articulated unit designed to handle the passenger traffic on this extremely heavy route. This unit, built by the Cincinnati Car Company and equipped by the General Electric Company, is the first three-car articulated unit placed in service in this country and the first electrically propelled unit of this kind to be placed in operation in the world.

The decision to purchase and operate a trial unit of this type was based on a careful study to determine the most economical means of handling the increasing traffic on the Woodward Avenue line. Nearly two years ago the officials of the Department of Street Railways, realizing that the growth of traffic would require some modifications in the car equipment on the heavier routes, made a thorough investigation of the rolling stock available for mass transportation.

The Woodward Avenue line, which carries nearly 43,000,000 passengers annually and is now operated with motor-car trail-car trains on sixty-second headway during rush hours, was selected as typical of the heavier routes in Detroit. Studies were made on the basis of furnishing off-peak service with motor-car trail-car trains as at present and supplementing this service during rush hour periods with (1) additional motor-car trail-car trains; (2) three-car multiple-unit trains; (3) three-car articulated trains.

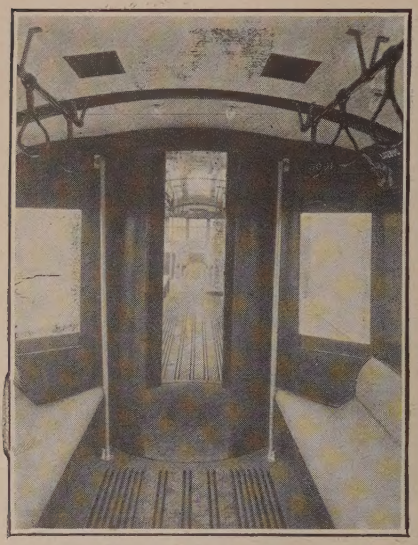
Rush-Hour Equipment Compared

Weights and seating capacity of the equipment considered for the rush-hour service are given in Table I.

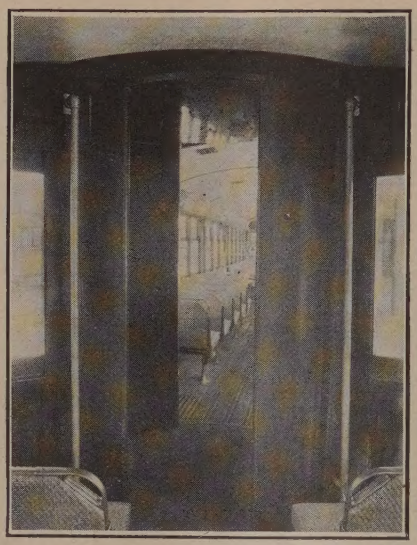
TABLE I—WEIGHTS AND SEATING CAPACITY OF EQUIPMENT CONSIDERED FOR RUSH-HOUR SERVICE

	Present Motor Car and Single-Deck Trailer	Proposed Three-Car Multiple-Unit Train	Proposed Three-Car Articulated Train
Weight complete, train less load, pounds	74,000	120,000	75,000
Weight, motor car, less load, pounds	47,000	40,000	.....
Weight, motor car, seated, pounds	54,000	47,000	.....
Weight, trail car, less load, pounds	27,000	.....	.....
Weight, trail car, seated load, pounds	34,850	.....	.....
Weight, train, loaded (seated) pounds	88,850	141,000	94,600
Weight, train, loaded (standing) pounds	103,400	162,000	114,200
Seating capacity	106	150	140
Pounds per seat	700	800	536

It was estimated that to handle successfully the rush-hour traffic the carrying capacity should be increased 12,000 passengers per hour over that provided during the non-rush hours. The comparison shown in Table II on page 360 was made on the basis of continuing the present off-peak service with motor-car trail-car trains



Interior View from Middle Car Toward Rear End Shows Position of Connecting Vestibule on Straight Track



A Full Connecting Opening Is Obtained Through the Vestibule, Even When the Train Is on a Curve

Motorman Located Right-Hand Corner of Leading Car. Brake Valve Piping Inclosed in Dash to Give More Knee Room

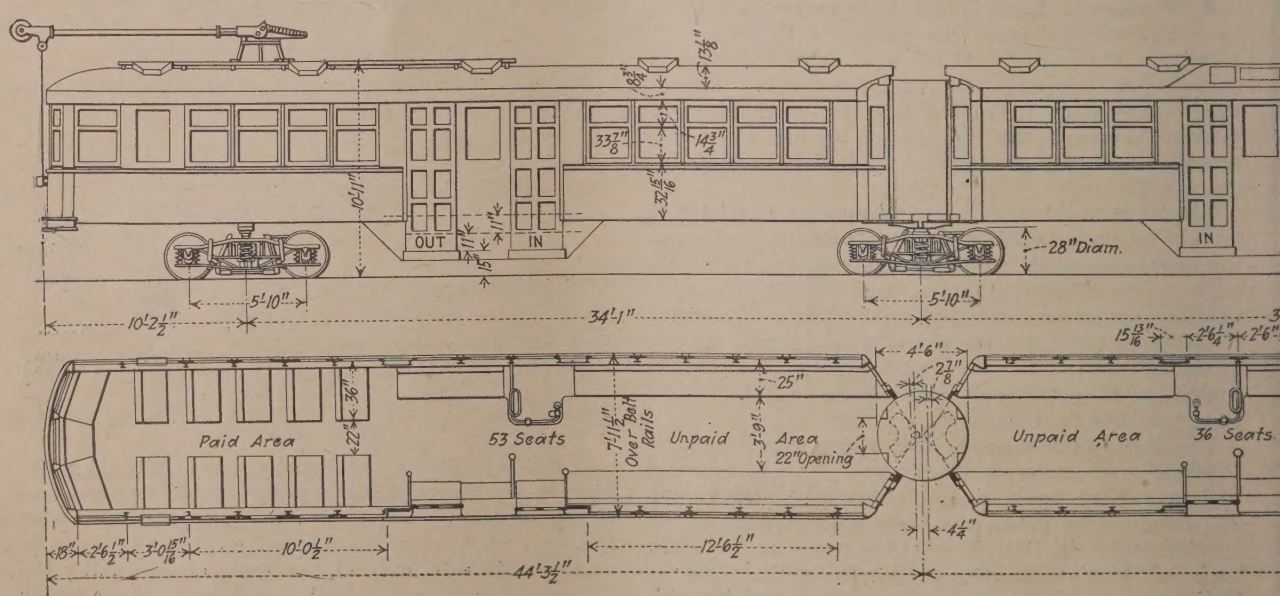
and adding additional service during rush hours to provide an additional carrying capacity of 12,000 passengers per hour, making a total carrying capacity during peak service of 16,200 passengers per hour.

The total expense for each type of equipment, including both fixed charges and operating costs, is given in Table III on page 360.

It is evident from this comparison that the three-car articulated train for the peak service shows lower operating costs, lower first cost and lower total annual charges than the other types of equipment considered. In addition to the advantages of lower weight, lower operating costs, and lower first costs for the articulated unit, the latter has the additional advantage of better riding qualities and, due to the available passageway between cars, it lends itself to a reduction in platform labor.

The improved riding obtained with this type of equipment is due to the fact that there is no overhang of the bodies beyond the trucks, adjacent ends of each body being carried on a center bearing on the truck bolster. When entering curves and passing over crossings, the greatest lateral movement on ordinary cars is at the ends overhanging the trucks. In an articulated train of this type there is no overhang at the adjoining car ends. Cars coupled in trains in the ordinary manner are subjected to lateral movement and have a tendency to roll on account of the oscillation transmitted back and forth between the different cars. In the articulated train this does not happen. Although each body is perfectly free to adapt itself to any curve or irregularity in track, there is no tendency to transmit rolling from car to car. In fact, there is a dampening action through the side bearings on the connecting vestibules which tends to check any rolling which may occur.

In analyzing the operating costs given in Table III, no consideration was given to a possible reduction in



Combination Cross and Longitudinal Seating Gives a Total Seat Capacity

Stanchions Are Made of 1-In. Aluminum Pipe

Conductor's Position Is Opposite the Center Door

the platform labor by using the articulated unit. It was considered that the platform charges would remain the same for this as well as the multiple-unit train.

The train is composed of three center-entrance, center-exit, light-weight type car bodies mounted on four trucks. It is arranged for single-end operation. The general floor plan and elevation are shown in the accompanying drawings. The inside trucks are mounted at the junction and under the vestibule between the first and second, and the second and third car bodies, and are trailer trucks. The two outside trucks mounted under the front end of No. 1 body and the rear end of No. 3 body are motor trucks, each equipped with two GE-275, 60-hp. motors.

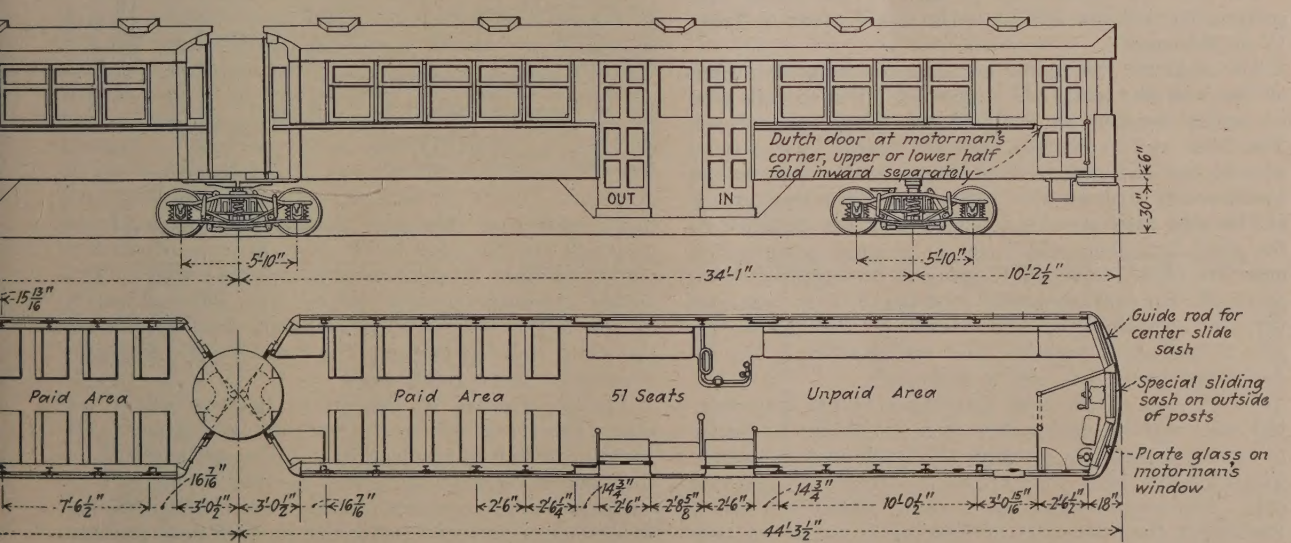
All four trucks are of a special passenger type arch-bar design with large helical springs mounted between the ends of the elliptics and with long helical springs carried in sockets cast on the sides of the journal boxes. They were built by the Cincinnati Car Company and have a wheelbase of 5 ft. 10 in., with 3¾-in. x 7-in. journals. The wheels are rolled steel of 28 in. diameter. The trucks are located so that there is a uniform spacing of 34 ft. 1 in. between their centers.

Distribution of the load on the four trucks is shown in the following table:

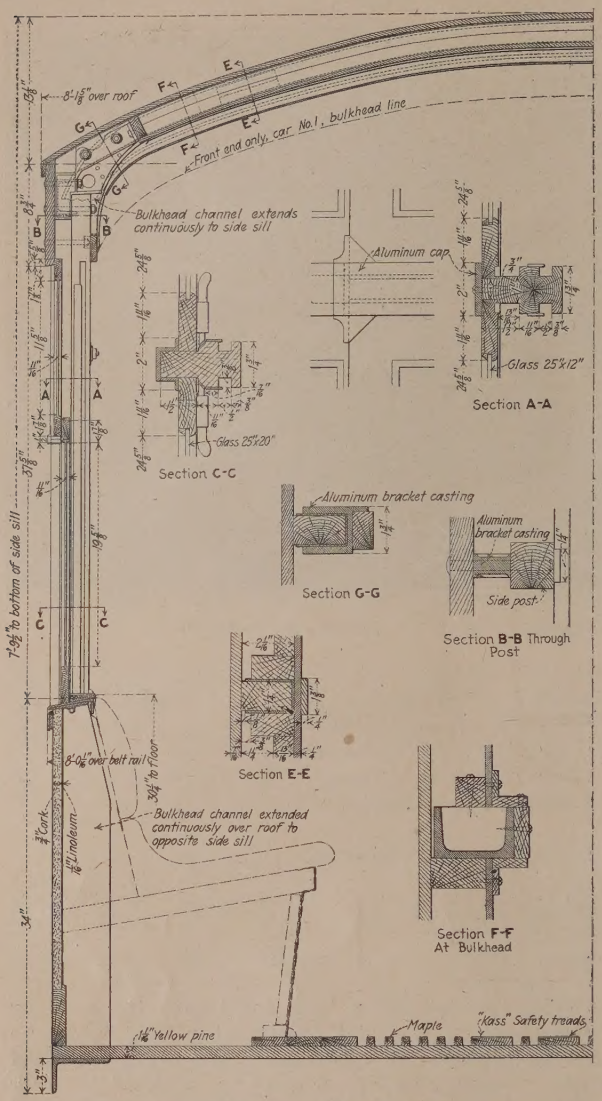
DISTRIBUTION OF LOAD ON TRUCKS

	No. 1	No. 2	No. 3	No. 4
Load on center bearing, pounds	11,155	11,595	10,595	9,355
Weight of truck, pounds	5,725	5,425	5,425	5,725
Weight of motor, pounds	5,000	.....	.....	5,000
Load on rail, pounds	21,880	17,020	16,020	20,080

From this tabulation it is noted that 41,960 lb. or 56 per cent of the total weight when light is on the driving wheels. This provides a rate of acceleration with a loaded train of 1.5 m.p.h.p.s. with 16 per cent coefficient of adhesion, which is sufficient to insure good acceleration under almost any rail conditions.



of 140. Train Is Manned in the Congested Period by Four Men



Cross-Section of Car Illustrates Use of Short Side Posts and Elimination of Top Plate

The general dimensions of each of the three cars comprising the new articulated unit are given in Table IV on this page.

The ends of the center car and the adjoining ends of the two end cars are supported on a special type of center bearing on each of the connecting trucks. The 5-in. x 3-in. x ⅜-in. side-sill angles are carried around the ends of each of these bodies and extend continuously around the entire body framing except at the side door openings, where they are fastened to the steel box piers which act as vertical compression members to reinforce the framing at the opening. Two pairs of diagonal channels of 3-in., 5.15-lb. material further reinforce the end framing, and the entire structure is tied together and stiffened by a No. 12 gage steel plate, 3 ft. 4½ in. wide.

To the end of this body framing is bolted a substantial steel casting, designed with a projecting nose that is carried directly in a cup in the truck center bearing. The adjoining body ends are each carried in a separate cup. The arrangement has a slight theoretical disadvantage in that the point of wearing is not at the true center of the truck, but this is overcome by allowing a slight additional clearance between the edge of the vestibule and the edge of the body flooring where it is cut out to allow rotation in going around a curve. This design of center bearing avoids carrying one bearing on top of the other and consequently does not require the lower bearing to carry the load of both cars with consequent more rapid wear.

Another feature of the center bearing which was given careful attention is that of lubrication. The parts are retained in place by a horizontal bolt passing through two ears on the lower bearing. This bolt extends between the projecting body noses. When the bolt is in place, a projecting shoulder on each nose prevents the nose from coming out of the socket, and at the same

TABLE II—COMPARATIVE DATA ON THE THREE METHODS CONSIDERED FOR INCREASING SERVICE

	Motor Car and Single-Deck Trail Car, Both Average and Rush	Motor Car and Trail Car in Average Service and Three-Car Multiple-Unit in Rush	Motor Car and Trail Car in Average Service and Three-Car Articulated Train in Rush
Headway, average service, seconds	180	180	180
Headway, rush service, seconds	47	60	57
Units required for average service	32	32	32
Additional units for rush service	91	64	71
Total units required	123	96	104
Seats per hour in regular service	2,100	2,100	2,100
Carrying capacity, rush service:			
Motor-trail car units	4,200	4,200	4,200
Additional units	12,100	12,000	12,000
Total of line	16,300	16,200	16,200
Annual Car-miles:			
Motor trailer	59,900	59,000	59,000
Rush-hour units	22,000	22,000	22,000
Operating costs, cents per car-mile:			
Motor trailer	31.2	31.2	31.2
Rush-hour units	31.2	43.8	37.4
Annual operating costs per train:			
Motor trailer	$18,400	$18,400	$18,400
Rush-hour units	6,860	9,650	8,228
Total annual operating costs based on number units required:			
Motor trailer, average service	$590,000	$590,000	$590,000
Rush-hour units	625,000	620,000	584,188
Total	$1,215,000	$1,210,000	$1,174,188

TABLE III—COST OF OPERATING UNDER THE DIFFERENT METHODS

	Motor Car and Single-Deck Trail Car, Both Average and Rush	Motor Car and Trail Car in Average Service and Three-Car Multiple-Unit in Rush	Motor Car and Trail Car in Average Service and Three-Car Articulated Train in Rush
Expenditure for rush-hour units:			
Ninety-one motor trailer trains at $23,000	$2,093,000	.....	.....
192 multiple-unit cars at $15,000	.....	$2,880,000	.....
Seventy-one 3-car articulated trains at $25,000	.....	.....	$1,775,000
Fixed charges at 13 per cent	272,000	374,000	231,000
Total annual operating costs and fixed charges	1,487,000	1,584,000	1,405,188

TABLE IV—GENERAL DIMENSIONS OF EACH CAR IN THREE-CAR UNIT

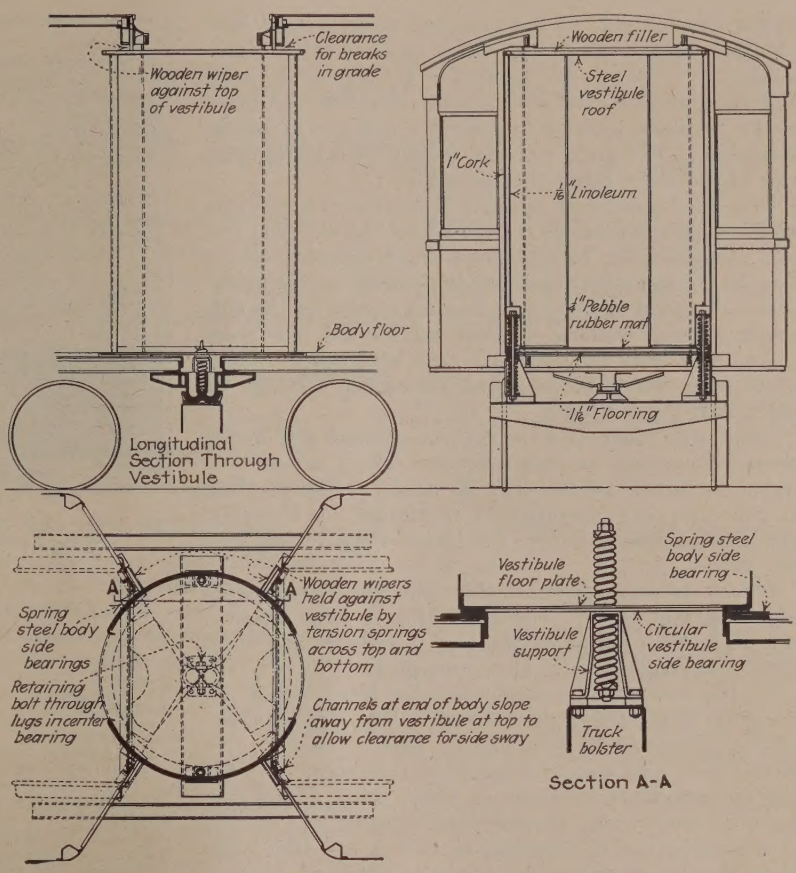
General Dimensions	Car No. 1	Car No. 2	Car No. 3
Length over all	43 ft. 10½ in.	33 ft 3 in.	43 ft. 10½ in.
Length over dash	42 ft. 8 in.	31 ft. 2 in.	42 ft. 8 in.
Length over body	37 ft. 3 in.	28 ft. 0 in.	37 ft. 3 in.
Rail to top of trolley boards	10 ft. 11 in.	10 ft. 11 in.	10 ft. 11 in.
Rail to underside of sill	33 in.	33 in.	33 in.
Extreme width	8 ft. 2 in.	8 ft. 2 in.	8 ft. 2 in.
Width at side sill	7 ft. 11 in.	7 ft. 11 in.	7 ft. 11 in.
Rail to first step	15 in.	15 in.	15 in.
First step to second step	11 in.	11 in.	11 in.
Second step to platform floor	11 in.	11 in.	11 in.
Door openings (center entrance)	30 in.	30 in.	30 in.
Door openings (motorman's door)	30 in.	30 in.	30 in.
Door openings (vestibules between cars)	22 in.	22 in.	22 in.
Diameter of vestibules	4 ft. 6 in.	4 ft. 6 in.	4 ft. 6 in.
Window post centers	30 in.	30 in.	30 in.
Truck centers	34 ft. 1 in.	34 ft. 1 in.	34 ft. 1 in.
Wheelbase	5 ft. 10 in.	5 ft. 10 in.	5 ft. 10 in.
Size of wheels	28 in.	28 in.	28 in.
Width of longitudinal seats (side wall over edge of cushion)	25 in.	25 in.	25 in.
Distance between seat cushions	45 in.	45 in.	45 in.
Seating capacity	51	36	53
Total length of train (over buffers)		122 ft. 8 in.	
Total seating capacity of train		140	
Radius of shortest curve—inside track		35 ft. 0 in.	

time allows free pivotal motion in any direction. In this way, no bolt holes are required in the sockets, and retention of oil is assured. Each body nose casting is cored out to form a chamber for oil and waste packing.

Bottom of Vestibule Forms Side Bearings

The bottom frame of each vestibule is reinforced with a substantial steel ring extending completely around its circumference. This ring is fastened to built-up side supports on the truck bolster by long bolts passing through compression springs above and below, and provided with shims or washers for adjustment. Thus each vestibule is supported entirely on the truck and simply extends into the opening between the posts at the end of each adjoining body. The vestibule floor ring extends above and rests upon the body framing, and the body floor is cut out in an arc so that each body is free to swing on its center bearing, while the vestibule remains stationary relative to the truck.

As the body tends to roll from side to side due to track inequalities, a flat steel rub piece on each side of the framing comes in contact with the steel ring under the vestibule and forms a side bearing. The load is transmitted through the vestibule ring to the spring supports on the truck which resist the rolling and tend to dampen it. In effect, therefore, the side bearings in this construction are up against the bottom of the vestibule rather than down against truck supports, as in the usual design.

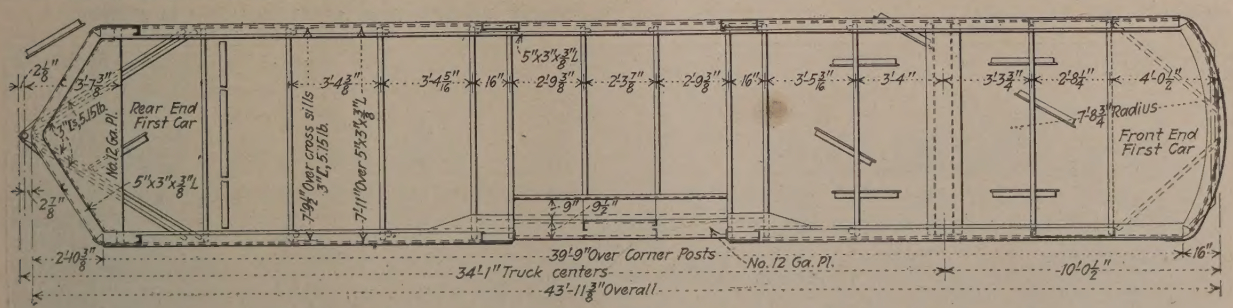

Clearance for breaks in grade
Wooden wiper against top of vestibule
Body floor
Longitudinal Section Through Vestibule
Wooden filler
Steel vestibule roof
1" Cork
1/16" Linoleum
1/4" Pebble rubber mat
1 1/16" Flooring
Spring steel body side bearings
Wooden wipers held against vestibule by tension springs across top and bottom
Retaining bolt through lugs in center bearing
Channels at end of body slope away from vestibule at top to allow clearance for side sway
Vestibule floor plate
Vestibule support
Circular vestibule side bearing
Truck bolster
Section A-A

The Vestibules Are Carried Directly on the Trucks and Form the Side Bearings for the Adjoining Bodies. Each Body Is Supported in a Separate Cup in the Truck Center Bearing

Clearance is allowed between the body end posts and the vestibule. As shown in the accompanying photographs and drawings, these posts are sloped away from the vestibule at the top to allow for rolling. In addition, clearance is allowed between the top of the vestibule and the body header. This is required to take care of vertical breaks in grade. As designed, the train will not only negotiate a 35-ft. radius curve, but also has clearance for a 10-deg. break in grade at the same time. The openings between the bodies and the vestibules are inclosed by wood wipers mounted in slides on the ends of the bodies and held against the vestibules by tension springs. This construction is clearly shown in accompanying photographs.

The vestibules are cylindrical in shape and are made of No. 14 gage sheet steel. They are of 54-in. diameter and are 6 ft. 6½ in. high inside, with a steel floor and top plate riveted to the cylindrical shell. The openings for the passageway are cut into the portion of the shell which extends into the car body. These openings are 22 in. wide and provide a clear passageway between the cars when the unit is operating on a track curve of 35-ft. radius.

Attention was also given to the problem of making the top of the vestibule weatherproof. The steel top is depressed 1 in. and is fitted with a wood disk 1 in. thick with an inverted bevel edge. The disk is made approximately 2 in. smaller in diameter than the steel top, so as to form a gutter between the rim of the depressed plate and the wood filler. This gutter collects any rain or moisture which may penetrate under the wiper board above the vestibule. Tubular grab handles extend full



Underframing of Front Car Shows Construction for Carrying the Body on the Pivot Truck

length on each side of the vestibule interior and these are connected to the gutter above so as to act as down spouts.

A layer of ¾-in. cork, covered with linoleum, is applied to the vestibule interior to deaden sound and give heat insulation. The same material is also used in the interior of the body, below the belt rail.

The side framing of the cars is of the straight plate girder type made of No. 14 gage sheet steel. The belt rail consists of a formed steel angle covered with a pressed channel which overlaps the outside of the girder sheet. Vertical stiffeners or fins are riveted to the side sheets at each window opening, but the ash side posts extend only from the belt rail to the letterboard. These short posts are held in aluminum socket castings by short heat-treated bolts.

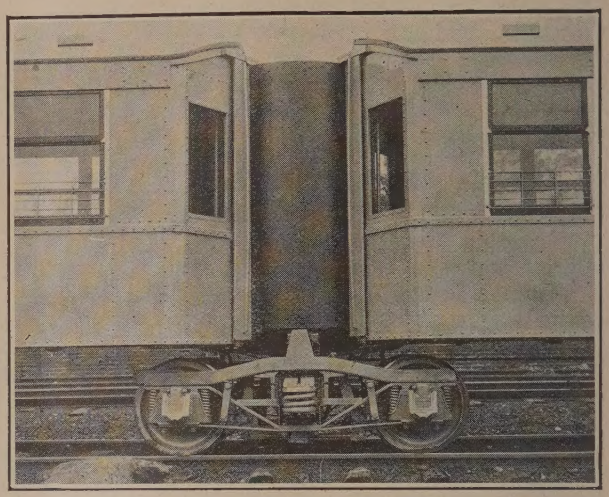
Cross sills made of 3-in., 5.15-lb. channel are spaced so as to support the car flooring. These are riveted to the underside of the side sill angles. The framing at the side door openings is reinforced by channels, plates and angles, to form the inside steps to the level car floor.

Cherry is used for the inside trim and is rubbed to a dull natural finish. The headlining is ¼-in. Agasote, curved to the contour of the roof. Railings and stanchions are made of 1-in. aluminum pipe.

In the two side front windows of the leading car the glass is framed in permanently. The glass in front of the motorman is ⅝-in. plate. This is used to give good vision and also to retard the formation of frost. The center front window is fitted with a specially designed sash which fastens tight against the outside of the posts, and is arranged so that it can slide sideways outside of, and in front of the left-hand window. A two-part folding dutch door is installed in the right-hand corner adjacent to the motorman's position. The upper half is glazed and the lower half paneled solid. Both the upper and lower halves of this door fold inwardly, thus making it convenient for the motorman either to make observations along the side of the train or to get out to throw switches, etc. Additional knee room for the motorman is obtained by running the air piping from the brake valve inside the dash structure.

K-35-JJ single-end control is used. The brake rigging is installed on the first and last car and is applied to the four trucks just as is done in an ordinary two-car installation. A brake cylinder, reservoirs and a GE-CP 127, 20-cu.ft. compressor are mounted under the front car, and a second brake cylinder and a pair of reservoirs are mounted under the rear car.

A standard Detroit five roll sign has been placed in the front hood. A similar sign is mounted on the side, over the door of the center car. This standard sign has proved particularly efficient in conveying sufficient information without the necessity of dash or auxiliary signs.



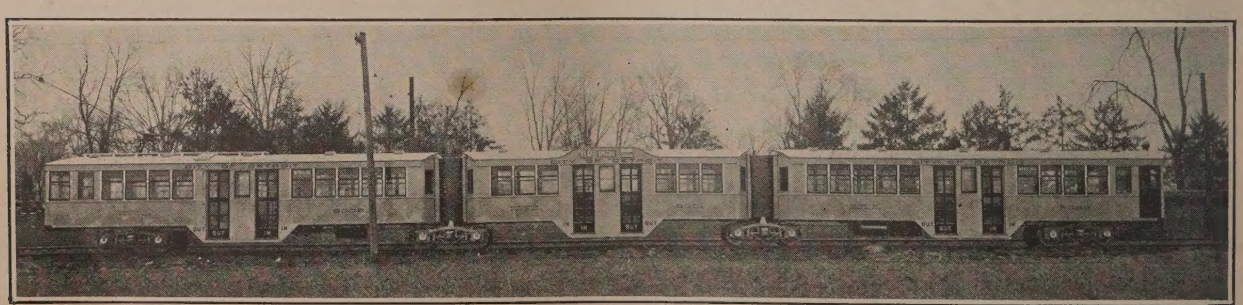
This View of One of the Connecting Vestibules Shows Its Mounting on the Truck, and Also the Center Bearing Castings for the Two Adjacent Bodies

The following material and equipment was used in the construction of the train:

Motors G.E.-275	Heaters.... Gold Car Heating & Lighting Co.'s nickel chromium wire
Air compressor..... C.P.-127	
Signals ..... Farraday	
Control K-35-JJ	Headlights ..... Electric Service H. D. B
Curtain fixtures ..... Curtain Supply Ring 88	Paint..Pratt & Lambert enamel
Curtain material..... Pantasote double face	Sand valve and traps..... Ohio Brass
Destination signs ..... Hunter Detroit Special	Seats ..... Cincinnati Car rattan covered
Fare boxes ..... Cleveland	Safety treads ..... Kass
Fenders..... H. B. Lifeguards	Trolley catcher ..... Ohio Brass
Gears and pinions..... G.E. long and short addendum	Trolley base..... Ohio Brass
Hand brake ..... Cincinnati	Ventilators ..... Nichols-Lintern
Thermostats ... Railway Utility	Headlining ..... Agasote

As articulated trains have been given serious consideration by a number of street railways for reducing the weight, first cost and operating costs of units on lines of very heavy traffic, the operation of this unit will be watched with considerable interest.

The Milwaukee Electric Railway & Light Company rebuilt some of its older type equipments into two-car articulated trains. These have been in operation for a number of years and have been very successful. The Brooklyn-Manhattan Transit Corporation has placed in operation a two-car articulated train made from some of its existing equipment. As both of these installations utilize existing rolling stock, it is thought that full advantage of articulation could not be obtained. The Great Northern Railroad of England has operated articulated units in steam service for a number of years with very successful results. The unit placed in operation by the Department of Street Railways, Detroit, however, is the first electrically propelled unit in which full advantage of articulation is utilized.



The Cylindrical Connecting Vestibules Between Cars Are Clearly Seen in This Broadside View

Traffic and Financing Topics of Midyear Meeting

St. Louis Gathering One of Largest Ever Held by American Electric Railway Association, Some 750 Attending the Dinner—Morning Session Devoted to Relief of Street Congestion, and Afternoon Session to Improved Financial Condition of Electric Railways—Many Committee Meetings Were Held

FROM all quarters of the country railway and supply men gathered at the Chase Hotel, St. Louis, on March 4 for one of the largest Midyear Meetings the American Electric Railway Association has held. The conference was primarily one of gathering information on two important subjects—street congestion and finance. The papers were very well received. Particularly timely were the papers and discussion on traffic, and great interest was shown in the subject. The papers at the afternoon session were devoted particularly to the reasons for and evidences of improving conditions in the industry. The banquet was attended by about 750, tickets having been sold for 769 places. Many of the delegates arrived on Sunday night and Monday morning, as Monday was occupied all day by numerous committee meetings. The convention was thus practically a two-day affair.

President Britton I. Budd, president Chicago Rapid Transit Company, presided.

Rolla Wells Welcomes Delegates

In the absence of Governor Hyde the address of welcome was given by Rolla Wells, receiver of the United Railways of St. Louis and former Mayor of the city. He spoke of early experiences in transportation in the city. Formerly the railways sized up the public, he said, in order to obtain all from the public they could, but now the tables are turned and the public is sizing up the railway to get as much out of it as possible. The changing spirit of the times, he said, is reflected in the increasing tendency of the public to go into a copartnership with the electric railways and thus help them out in carrying their burdens.

President Britton I. Budd quoted figures to show the increasing importance of the electric railway industry, and the need for new capital that always exists if the industry is to progress. This year, he stated, there is needed from $200,000,000 to $250,000,000 additional capital. Part of this may be secured by what he characterized as public ownership of the best kind—the ownership of the company's junior securities. The appeal should be made to the users of the service that they must become partners in the business and supply their share of the capital so that they may continue to get the kind of service they desire. There are now nearly 2,000,000 stockholders in the electric light industry, indicating what can be accomplished along this line.

The White House
Washington

Feb. 28, 1924.

My Dear Mr. Sawyer:

You are very thoughtful to remind me of this next meeting of the American Electric Railway Association which you are holding at St. Louis on March 4. My recollections of last year's gathering, when I had the privilege of addressing one of the sessions of the convention, are so pleasant that it gives me added satisfaction to ask you now to present my compliments and good wishes to the members of the forthcoming meeting. I have noted some gratifying evidences of expanding prosperity in your industry in the last season, and hope it may be further emphasized in the coming year.

Very truly yours,

Calvin Coolidge.

Letter Addressed to W. H. Sawyer, Chairman Committee on Arrangements at the St. Louis Meeting

According to Mr. Budd, one of the companies of which he is president has recently put out 7 per cent "prior lien" stock to cover about one-half of the new capital requirements. Of a total of $1,500,000 of this stock about a million has been sold to users of the service.

Congestion was felt by Mr. Budd to be a serious problem, not alone of the street railways, but of the public as a whole. If congestion continues to increase, it may result in a need for grade separation to make it possible to pass traffic. Such changes as surely should not be the burden of the electric railway, inasmuch as they are an improvement for the entire community.

The motor bus is not regarded as a problem by Mr. Budd. Within a decade or a half decade he feels that every motor bus that is operating on schedules in this country will be operated by an electric railway. The manufacturers appreciate that the largest field for the bus is with the electric railway companies, and that they are the logical and the only agency for co-ordinating transportation.

Three situations confront the electric railway today. First is the problem of finance, which must be solved in the interests of those identified with the property, and which will also be in the best interest of the public. Next the fact must be appreciated that the motor bus is an adjunct that can be used for the advantage of the industry. Lastly, a program of modernization must be carried to completion. If these three things are followed through there will not be any serious problem.

Mr. Budd's speech is printed in full elsewhere in this paper.

Street Congestion Features Morning Session

The theme of the morning session was street congestion. The general problem, with specific reference to St. Louis, was presented in a paper by Harland Bartholomew, city plan engineer of St. Louis. In this paper the need for decentralization of the business district was urged as the real solution of the congestion problem. This paper was followed by a discussion from the standpoint of Los Angeles, by G. B. Anderson, manager of transportation Los Angeles Railway; Cleveland, by J. J. Stanley, president Cleveland Railway (read in his absence by Paul E. Wilson); Chicago, by R. F. Kelker, Jr., Kelker, DeLeuw & Company, consulting engineers; Boston, by John H. Noyes, chairman street commission city of Boston. Abstracts of the first four of these papers are printed elsewhere in this paper.

The traffic problem in our modern cities was not slow of development, but was an acute attack following shortly after the advent of the motor vehicle, according to Mr. Noyes. Local conditions are in each case responsible for the traffic difficulties, so that it is difficult to generalize.

The street area in Boston is greater than that in many other large cities, but on account of the peculiar layout the streets are not so good for traffic movement. This, Mr. Noyes said, requires particular care in handling the local congestion problem. He is engaged in making a survey of the automobiles that are parked on the streets of Boston. From this he will determine which persons are using the streets for unnec-

essary parking and will request them to leave their cars at home and patronize the street railway. This will be possible, he believed, inasmuch as Boston is one of the few cities where there is close co-operation between the railway company and the city authorities.

Mr. Noyes agreed with President Budd that some person should be in authority to make the proper recommendations for traffic regulation and to enforce them.

Financial Problems Discussed

The afternoon session was devoted to the subject "The Improving Financial Conditions of Electric Railways." This was presented in the form of a symposium, the subject being treated from the viewpoint of the investment banker by J. K. Newman, from the viewpoint of the economist by Richard T. Ely, and from the viewpoint of the holding company by B. C. Cobb. These papers are abstracted elsewhere in this issue.

The theme developed by Mr. Newman was that the public must be given more knowledge of the gains made by the industry in the recent past, and the outlook for still further improvement. He called attention to the fact that electric railway securities are now being considered as sound investments where the conditions warrant.

Speaking from the viewpoint of the holding company, Mr. Cobb pursued a similar line of thought, and he too was agreed that the industry has taken an upward trend in the security market.

Professor Ely laid particular stress on the point that there has not been sufficient attention paid to the question. Taxes have been increasing in all civilized countries for a hundred years and more. We are living under a law of increasing public expenditure, he said. This has resulted in a spread in the activities of government, so that now one dollar out of every seven earned goes to taxes of one form or another. For this reason he feels that we must all get a broader view of taxation. Education of the public was also urged by Mr. Ely. This is necessary to make effective any campaign of publicity designed to instruct the public in the necessity for a more tolerant attitude toward utility problems.

Following the presentation of these papers, on the motion of J. N. Shannahan, a vote of thanks of the association was given to the committee on meetings and subjects, to the committee on general arrangements for the meeting, and to the committee on local entertainment.

Features of the Dinner

The Midyear dinner held on Tuesday evening at the Hotel Chase was marked with great enthusiasm. President Budd presided as toastmaster. During the course of the dinner he read a message from President Coolidge, which is printed elsewhere.

The address of welcome was given by Mayor Henry W. Kiel of the city of St. Louis. He said that if the companies give service they will come out of their difficulties all right. The public doesn't know what it wants, and for that reason the management can do a great deal in influencing public opinion the right way.

The speaker of the evening was Hon. Eliot Wadsworth, Assistant Secretary of the Treasury. He gave an excellent talk on the value of thrift and honesty in public business, which is printed elsewhere in this issue.

A defense of the Constitution and its provisions was made by Hon. B. F. Brough, Mayor of Toledo. He did not see any advantages in municipal operation of utilities, but felt that work of this character should be left to private enterprise.

Some Sidelights on the Convention

One feature of the St. Louis convention was the fact that every detail of the arrangements had been carefully worked out and all requirements of delegates anticipated. Under the direction of General Chairman W. H. Sawyer, president East St. Louis & Suburban Railway, the Birney Club of St. Louis and the Electrical Board of Trade were particularly responsible for these things. Transportation and guides were available all the time to show delegates anything they wanted to see. Quite a point was made of providing every possible personal service. A Fageol bus chassis with an American Car Company body and a Yellow Coach Manufacturing Company chassis with a St. Louis Car Company body were placed in the hands of the Birney Club for carrying delegates between station and hotel and for special trips.

A feature of interest to the visitors was a display of various types of street railway equipment. Alongside a bobtail car with a "hay motor" and one of the original drivers, who is still in the employ of the United Railways, was one of the latest cars of the same company and one of the new cars built for the Brooklyn City Railroad. Both of these cars were described in recent issues of this paper. These cars were placed on a side track adjacent to the Chase Hotel, and attracted much attention from the many delegates who visited them. The coaches which were in service transporting visitors were also a part of this exhibit.

Care was taken that the local people were informed through the newspapers that the meetings were open to the general public, and the subjects were announced with the comment that they would be treated from a viewpoint broader than the railway interest. At the banquet arrangements had been made to broadcast the speeches from station KSD, St. Louis *Post-Dispatch*. The careful planning was also reflected in the unusual seating list and menu, and the very attractive floral decorations. Three quartets, one of which was the Louisville Railway inspectors' quartet, helped to entertain.

*Electric Railways on Firm Basis**

By BRITTON I. BUDD
President American Electric Railway Association
President Chicago Rapid Transit Company

THE MAGNITUDE of the industry, the increasing ratio of annual rides per capita, the improvements being carried out, the greatly improved public relations inspire unbounded confidence in the future of the electric railways.

THIS annual Midyear Conference of executives of the electric railways of the United States has met to consider two main problems which confront us. These are, first, the financial condition of electric railways and the necessity for new capital in the industry; and, second, the traffic problem in our large cities, which is steadily growing worse and causing great inconvenience to our citizens. I trust that our deliberations here may be helpful in the way of pointing to a solution of both problems.

We are on the threshold of an era that will demand a very large increase in our urban and interurban transportation facilities. To meet this growing demand, a steady flow of capital into our industry must be provided. We are here to discuss ways and means of stimulating this flow of needed capital. We cannot wait for others to solve these problems for us. It is up to this industry to lead the way to a solution. I shall not attempt to go into details of either of the subjects before us for discussion. These subjects have been assigned to experts, so that I shall confine myself to a brief outline of the importance of their solution.

More than 16,000,000,000 passengers were carried on the electric railways of the country in 1923. That is a considerable increase over the best previous year, and there is no doubt in my mind that each succeeding year will show a still greater increase. You electric railway executives are responsible for the safe and speedy transportation of this vast army of riders, an army outnumbering by more than 145 times the entire population of the United States.

For the services they performed the electric railways of the country last year were paid $1,100,000,000, a sum nearly equal to 2 per cent of the entire production of the United States. That gives some idea of the importance of our industry in the life of the nation.

The magnitude of the electric railway industry may be more readily appreciated when compared with other

*Address before Midyear Meeting of the American Electric Railway Association, St. Louis, Mo., March 4, 1924.

great public utilities. Our gross revenue last year was only slightly less than that of the entire electric light and power industry and vastly greater than the income of the gas, telephone or telegraph industries.

The electric railways last year employed 302,000 persons, or 50 per cent more than were employed by the electric power and gas industries combined. The investment in the properties which we operate is approximately $6,000,000,000, a sum greater than the investment in gas, telephone and telegraph companies combined.

I have quoted these figures to show the magnitude and importance of our industry and to give some idea of the amount of capital that must flow into it in the future.

On a conservative estimate the traffic of the electric railways of the country will increase to the extent of 500,000,000 passengers a year. This will add to gross revenues more than $35,000,000 a year, and to produce that additional revenue will require new capital to the amount of $175,000,000 a year.

Customer and Employee Ownership

Where is this new capital to be procured? Most of it must come from the public using this kind of service through what is known as the customer-ownership plan. The electric light and power industry has now more than 2,000,000 stockholders, a very large percentage of whom have become stockholders in the last few years. If it can be done in other industries, it can be done in ours, and it is up to us to see that it is done.

About three months ago we started the sale of stock to customers and employees on one of the electric railways with which I am connected. At the present time 70 per cent of our employees are shareholders, or are acquiring stock on the monthly payment plan. The selling campaign is still under way, and the latest reports show that we have upward of 3,000 stockholders living in the communities served by our railroad. A majority of them are paying on the monthly installment plan. The average number of shares to a subscriber is between three and four. That shows how widely the stock is being distributed, and the wider the distribution the more friends the company makes and the better are its public relations. Our employees have sold all this stock, and while selling it to their friends and acquaintances, they have sold the company to themselves.

Compared with some industries ours is youthful in point of years. It has had its trials and tribulations. The supreme test came during the World War, and the fact that our industry survived through that trying period and emerged from it vigorous and healthy is the best evidence of its stability.

But as we grow older it is obvious that we must keep pace with the spirit of progress. Worn-out policies and methods of operation must be discarded. The equipment of the electric railway of twenty years ago is rapidly being discarded in favor of modern equipment. This is evidenced by the large number of new cars that were placed in service last year and the number ordered for this year.

For a number of years everything that ran on rubber tires was regarded as a bugbear by the electric railways. Experience has demonstrated that for mass transportation the gasoline-driven vehicle cannot supplant the electric car. We have very properly accepted the motor bus as one of the necessary adjuncts of our transportation business. We are rapidly becoming acquainted with its uses as one of the tools of urban and interurban transportation, and are co-ordinating it with our electrically propelled cars.

The general public is no longer looking to the individual, the often irresponsible operator, for bus service. It is looking for bus service to the well-established and responsible electric railway company.

The automobile is doing much to advance the comfort and convenience of the people. It is revolutionizing their habits, making it easy for them to move about, with the result that they are traveling more than ever before. The electric railways are profiting by this change of habit. The more the people move about, the more we carry on our electric railways. This is evidenced by the steadily increasing per capita rides in our metropolitan centers.

In another way the automobile has changed the habits of our people. It has taught them how they may travel in ease and comfort and with speed. Our aim must be to approximate that speed and comfort. We must provide more comfortable and attractive equipment than was considered necessary a few years ago. The electric railways that are providing these improvements are succeeding.

Increasing use of gasoline-driven vehicles has brought to our large cities serious traffic problems which our industry must help to solve. The great mass of the people ride on the electric railway and will continue to do so. They will not tolerate much longer the endless delays caused by the small minority riding in automobiles. Neither can the automobilists themselves afford to put up with the numerous delays they daily encounter. A solution of the problem must satisfy the users of both kinds of transportation service.

The answer in many places will doubtless be along the line of separation of grades, allowing the electric railways to give a rapid transit service. Such a solution will be economically possible only in the very large cities because of the enormous capital expenditures involved. I am told that General Butler, without a great deal of experience in the handling of traffic affairs, has, in a few weeks, brought about marked improvements in Philadelphia. These improvements have benefited the automobilist as well as the car riders and pedestrians. If General Butler can do that in Philadelphia, the trained and experienced executives of the electric railway industry, working in conjunction with city authorities, should be able to work out a solution in other congested centers.

The opportunities for the electric railway executive of tomorrow are infinitely greater than were the opportunities of the executive of yesterday. A few years ago it was enough that a successful operator should know how to handle men and motors. The successful executive of today must know a great deal more. He must have a thorough comprehension of public relations, of how to gain and hold the good will of the public. He must understand the modern value of advertising and proper publicity. He must know not only how to supply transportation service but how to merchandise it, for merchandising methods are as essential to the electric railway company as they are to the dry goods merchant.

Good public relations must be based on good service. The best selling methods will not succeed unless the goods are salable. The railway executive must give the best service that is possible, then tell the people what he is doing.

Much has been accomplished in this direction within the last two or three years. There is no doubt that the public is today much better informed on our business than it ever has been in the past. Through the educational work which our association and the individual companies have carried on, the public has come to understand the essentiality of our service. The public is today much more interested in the things we are doing to improve service than it is in the rate of fare. If we continue to make improvements and to tell our customers of the things we are doing for their greater comfort and convenience, they will be with us in anything we may undertake.

Our industry is one which requires the best management that can be obtained. Some industries, due to the peculiar characteristics of their business, may succeed with average managerial talent. The electric railway to succeed must have exceptionally qualified and capable management. The field offers bright prospects for the many young and capable men who are entering it as their life work.

As I travel around the country I see more and more electric railway companies putting new and attractive cars into service, cars equipped with every modern improvement for the safety and comfort of the public and for economy in operation. I see the remarkable growth in the freight handled by our interurban railroads. I see the demands of the public for improved service being met on many interurban lines with parlor and dining cars, and even sleeping cars on some lines. And I feel that an earnest effort is being made by our executives to perform the obligations which the nature of our business imposes upon them.

As I see the improvements we are making, the increase in the number of passengers we are carrying, the better understanding of our problems on the part of the public, and as I try to visualize the magnitude of the industry in which we are engaged and its future possibilities, I am inspired with unbounded confidence in the future of American electric railways.

Decentralization a Real Answer to Street Congestion*

By HARLAND BARTHOLOMEW
City Plan Engineer, St. Louis, Mo.

FROM a purely theoretical standpoint we could conceive of a city planned for an ultimate population, wherein a balance might be struck between the capacity of streets in the business district and that of approach thoroughfares. In this city effective separation of street car and automobile traffic might be accomplished, either by subways or by separate streets for each class of traffic, and wherein traffic space, including sidewalks, might be apportioned to building heights and character of property use. But this is purely speculation today, for we cannot limit the size of cities. It is more or less impossible also to readjust satisfactorily the streets of existing cities. Palliative devices such as subways and elevated roads are expensive and public opinion has not reached the point where it appreciates the relation between building heights and street congestion.

The average American city hesitates to strike directly at the basic causes of street congestion. City councils will refuse to enforce low building height limitations, because such structures are viewed as characteristics of provincialism and such regulations as an unwarranted interference with business opportunity. Apparently not until the economic waste of street congestion assumes appalling proportions will the community act in self-interest to solve this phase of the problem.

Street congestion is an economic problem and must be so approached. The losses due to traffic blockades and sluggish circulation touch every individual in the city. Living and business are both affected. Transportation costs rise. Movement from place to place becomes practically impossible. Property values which depend upon circulation become unstable. It is roughly estimated that the impedance to traffic in the central business district of Chicago due to parking alone causes an economic loss of $60,000,000 a year. This is a super-tax upon all citizens equal to one-third of the regular taxes levied by the city itself, It is obvious that such excessive and unnecessary charges, if long continued, will have serious results. Expenditures upon devices which offer only temporary relief merely postpone the day of reckoning.

All action and all expenditures should aim at a permanent solution of the traffic problem. The logical mode of attack should be by the following steps: (1) To secure the maximum use of existing street space; (2) to reduce the volume of non-essential traffic in congested centers and expedite the movement of that which remains; (3) to increase the amount of street space when economically justifiable.

EFFORTS MUST BE MADE to obtain maximum use of street space, to reduce non-essential traffic in congested centers, and to increase street space where essential. Many plans proposed for relief may result only in increased vehicle traffic. Decentralization does not involve economic waste.

Neither of the first two suggestions above need involve anything but minor outlays of public funds. Both would seem to be natural means of approach to the problem of street congestion. Certainly all possibilities of this sort should be exhausted before the city undertakes an ambitious program of street improvements.

USE OF STREET SPACE FREQUENTLY IMPROVIDENT

Street space was originally intended and designed as a means of access to and egress from private property. It was never intended for private use nor for the conduct of private business, including storage. Often where street space is not needed it may be leased for private purposes, usually for a fee. There is no more reason why street space should be given over to the parking of automobiles than there is for granting the wholesale grocer right to use part or all of the sidewalk and street space in front of his building for the storage of his commodities. Street space should be reserved for moving traffic wherever such space is so needed. The parking of automobiles is not a public responsibility and public funds should not be expended for this purpose. Automobile storage should be taken care of on private property, through private initiative, as other forms of business are conducted.

Some figures illustrative of the improvident use of street space may be of interest:

The streets of the business district of St. Louis with few exceptions are 60 ft. wide and have a normal capacity of four lines of vehicles. On these streets 2,500 cars may be parked. On an average day from 13 to 15 per cent of the number of standing vehicles are commercial. Pleasure cars alone occupy approximately 20 per cent of the street space. At a normal hour during the day moving street cars, providing transportation service for the general public, occupy but 1.5 per cent of the street space.

During the rush hour, when every available square foot of roadway ought to be devoted to movement, parked cars still absorb 20 per cent of the roadway. The vehicular flow, thus restricted and confined to narrower channels, slows down to such an extent that from 50 to 100 more street cars accumulate in the district than should be there according to schedule. Two thousand vacant standing automobiles cause the street cars, carrying 75,000 or more persons home from work, to lose from five to fifteen minutes of scheduled time. It is estimated conservatively that parking during rush hours reduces the efficiency of streets in the business district to 36 per cent. This is a matter which cannot much longer be disregarded. The conditions of the rush hour today will be normal conditions a few years hence.

Something over 52,000 vehicles entered the business district of St. Louis daily in an eleven-hour period in 1922. During the maximum hour by actual count 9,843 vehicles entered the business district, whereas there was only a total area available for parking 2,500 cars, or somewhat less than 25 per cent of the maximum hour arrivals. There is a parking limit of one hour in the St. Louis business districts. Even if this regulation were strictly enforced during the eleven-hour period but half the cars entering could be parked for the hour. As the volume of traffic increases, which is apparently a continuous process, and parking time is reduced, the proportion of parked vehicles to the total will become correspondingly less. Manifestly it is impossible to provide parking space in the streets of the business district of any moderate-sized city for the accommodation of all vehicles. Street space, therefore, should be put to the service of the greatest number. In Chicago it was found that passenger automobiles formed 51.3 per cent of the traffic volume entering the Loop on a normal weekday, but carried only 18.9 per cent of the passengers. Street cars formed only 2 per cent of the traffic and carried 74 per cent of the passengers.

As cities increase in size and traffic increases in even greater proportion merchants will find that an ever decreasing percentage of their customers are dependent upon the automobile for access to the shops and stores. And for even this decreasing number there

*Abstract of a paper presented at the Midyear Meeting of the American Electric Railway Association, St. Louis, March 4, 1924.

will be less and less unlimited parking space in nearby street areas. The demands of circulation will have to be met and can only be met economically by withdrawing the general storage privileges previously granted. It should be obvious that this is a measure to which all cities eventually must turn.

Roadway Widths Should Be Chosen for the Traffic

The city, however, even with its streets practically free for moving vehicles, still has another means of lessening congestion and making streets safer. Roadways should be designed for the specific traffic service expected of them. Roadway widths have usually been and still are largely determined in an arbitrary manner by consigning a proportion of the total street width to roadway space. All roadways for modern traffic should have widths based upon the number of lines of traffic to be accommodated. Failure to adapt paving designs to the changed demands of vehicles has cost many millions of dollars in taxpayers' money and introduced unnecessary complications into the traffic problem. In one moderate-sized city of the Middle West the city engineer is still laying 30 and 40-ft. pavements in residence districts when 26 and 36-ft. would accommodate respectively three and four lines of vehicles just as well.

In the last five years the excess pavement charge against that city is estimated at no less than $125,000. Excess pavement, while not of serious importance as far as traffic in residential districts is concerned, becomes a great annoyance in congested centers. It invites disregard of parking rules and is a frequent cause of traffic accidents. It also reduces sidewalk space unnecessarily. A roadway which is really only wide enough for four lines of vehicles seems to be capable of carrying five or accommodating parked cars at all angles to the curb. The uncertainty which results from such conditions hinders the enforcement of proper traffic rules.

Careful study of roadway widths in congested centers will frequently show that a slight change here and there, either in parking rules or in the roadway itself, will make an appreciable difference in the flow of traffic. The pavements in the business district of Chattanooga, Tenn., were not designed for angular parking, but practically every street was so used. Vehicular movement was seriously impeded and traffic conditions were intolerable. Market Street, with a double-track car line and which should be a commodious six-line thoroughfare, was reduced to a two-line street, automobiles of all kinds and street cars using the line occupied by the rails. The introduction of parallel parking has cleared the street car right-of-way and opened up two new channels for other vehicles. Broad Street in the same city, a 126-ft. street, has a 96-ft. roadway and is theoretically capable of carrying ten lines of vehicles. Unsystematic parking on sides and center, however, has reduced this street to a two-line thoroughfare. Chestnut Street, with a four-line roadway, because of careless angular parking, at times becomes so badly blocked that automobiles must be moved upon the sidewalks to clear the street.

These are cases in which roadways properly designed for certain use become extremely inefficient through misuse. In the case of the Washington Avenue pavement in St. Louis, laid when the street was recently widened, it was found that a 50-ft. roadway with a double-track car line, while theoretically and actually capable of accommodating six lines of traffic, did so at such a loss of speed as to affect seriously the capacity of the street as a carrier. In order to reduce the hazard of passing between parked vehicles and street cars and thus to increase the traffic flow the curbs were set back 3 ft. on either side. The 56-ft. pavement now passes approximately twice the number of vehicles per hour.

Improper Transit Routing May Cause Trouble

The improper routing of transit lines is a common source of trouble in congested centers. Left-hand turns are frequently made directly across the flow of traffic on the busiest street. The delays thus caused react unfavorably upon all traffic on that street and upon cross streets. A slight change in routing which would not inconvenience the riding public would entirely eliminate many of these left-hand turns at strategic points and bring the remainder at corners not so important.

In Toledo the transit routing plan prepared for the city proposed the removal of car lines from alternate parallel streets in the business district so that each type of carrier might have its own thoroughfare. The movement of both the automobiles and street cars through the congested center would thus be greatly facilitated from the standpoint of improved transit service and relief of congestion. Such a separation of street car and automobile routes is highly desirable and should be undertaken at every opportunity. It is practically impossible to make effective use of street space so long as the flow of traffic is unsystematic.

One great contributing factor in street congestion is the unscientific street plan possessed by most cities. Unsystematic routing of traffic is frequently due to the lack of suitable streets. The automobile seeks direct routes and few of these are available in the average city. Even more difficult than the unscientific apportionment of roadway spaces in relation to lines of travel is the unscientific width and arrangement of streets that might be expected to afford a satisfactory scheme of circulation in any given community. A study of the traffic problem, even in small communities, usually discloses certain street openings, cutoffs or widenings, often inexpensive, whereby new routes of travel might be opened that would afford considerable relief throughout the whole city.

The development of a city plan is absolutely essential to any study of street congestion. While it is beyond the scope of the present paper to discuss the character and extent of a comprehensive city plan, suffice it to say that this embraces a street circulation scheme usually characterized as a major street plan, routing of transit lines, study of the railroad situation involving location of freight and passenger terminals and separation of grades at prominent street crossings, determination of size and location of recreation spaces and regulation of the use, height and size of all buildings, generally known as zoning.

It has been observed that as fast as new streets are opened they are generally used very nearly to capacity within the course of one year. This would seem to represent something more than the average increase of vehicular registration in the city and supports the theory that the more street space provided the more traffic is invited. This, of course, solves no problem and bears out the contention that it is impossible to provide sufficient street space for the movement of all vehicles, at least within a limited time, such as rush hours. The problem therefore resolves itself into one of whether there may be sufficient economic justification for any given expenditure. Within limitations that may probably be determined more or less accurately in any given case, remedial measures involving expense

Suggestions for Traffic Relief

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Every city should have a comprehensive city plan.

The volume of traffic should be reduced by excluding passenger automobiles from certain streets or from all streets in areas where congestion is most acute.

Building heights should be rigidly restricted.

Street widening, subway construction, arcading or elevated sidewalks do not in themselves constitute a solution of street congestion and should be undertaken only where economically justified.

may be undertaken. In the St. Louis plan, for instance, most of the street widenings have been accompanied by increases in property values sufficient to pay for those widenings and benefit assessments have been levied approaching the total cost of improvements.

LIMITING THE VOLUME OF TRAFFIC

Statistics recently prepared show that of 152,339 vehicle movements in the business district of Baltimore only 21,036 were street car movements, while during the rush hour the 131,303 vehicles handled only 11 per cent of the total passengers carried, while the street cars handled 89 per cent. At the three most important street crossings in Montreal there were 75 per cent more vehicles than street cars, but these vehicles carried only 7 per cent of the passengers carried by the cars.* An examination of Table I indicates that the great bulk of vehicle movements in any business district consists of individual passenger automobiles that have little relation to the business of the district. The commercial vehicle traffic that undoubtedly does have relation to the transaction of business is less than 50 per cent of the total.

The passenger automobile causes most of our street congestion because of its great preponderance of numbers. It is therefore suggested that passenger automobile movement in congested districts be entirely restricted, or at least confined, to certain streets so that so much street space as may be necessary can be made available for the commercial vehicles that have most direct relation to business, and for street cars that carry by far the greater bulk of people.

INCREASING STREET SPACE A DIFFICULT TASK

Problems connected with the actual physical increase of street space should be solved through study of the city plan. Some relation should probably be worked out between the vehicular capacity of the business district and that of approaching thoroughfares. This is a difficult, but not impossible, matter of determination.

It is an obvious impossibility to widen streets in the existing business district. This is the condition that obtains in most cities of approximately 500,000 population or greater. In these larger cities measures for the relief of congestion have been suggested. Removal of street cars from the surface of the streets by building subways has been proposed, as well as the arcading of sidewalks, elevation of sidewalks and similar palliatives that do not of themselves constitute a solution of the problem of street congestion. They are mere makeshifts to relieve a temporary condition, and by their very nature will invite more traffic and consequently a pyramiding of problems, physical and financial.

Obviously the construction of subways, the arcading of sidewalks or the elevation of sidewalks cost considerably more money than the advocates of these proposals realize. Few cities, for instance, can afford subways in business districts or rapid transit lines outside the business districts. Table II has been prepared to show the approximate present costs of subways and the necessary riding which must take place in order to produce sufficient revenue to justify the expenditure. The figures are prepared on a basis of present prices and under conditions that obtain in St. Louis as regards fares and construction costs. From this table it has been estimated that St. Louis can scarcely afford rapid transit construction on the basis of present riding, and this is the condition that will generally be found to obtain in all but a very few largest cities.

The writer knows of no existing condemnation precedents by which anything approximating accurate estimates of costs for sidewalk arcading can be made. It is obviously an expensive process. The same is true of sidewalk elevation. With these, as with subway construction as means of relief from street congestion, one continuously reverts to the question previously implied in this paper as to why we should invite or undertake costs for those necessarily expensive projects when they do not constitute a real solution of the problem of street congestion. There is only one possible justification for any such measure, which in itself is not necessarily sufficient. This is that if in any particular instance where an extremely aggravated condition of congestion occurs, one of these several measures might properly be undertaken. This would not necessarily justify wholesale adoption of such measures for the relief of all street congestion. For example, it has been estimated that the value of time delays to individual vehicle movements justifies a capital expenditure of $6,000,000 for the double-decking of Michigan Avenue in Chicago, a notable improvement recently completed. The Michigan Avenue project cost approximately $15,000,000, of which $6,000,000 was attributable to double-decking, indicating that in this particular instance the large extra expenditure was justified. A peculiar condition obtains here, however, for Michigan Avenue is the most favored entry for automobile traffic to Chicago's Loop district from the north, the direction of the heaviest travel, and this traffic was formerly seriously impeded by cross-traffic between the business and wholesale district west of Michigan Avenue and the large freight house district east of this thoroughfare. Here was a special condition justifying the double-decking of the street that will probably not obtain at any other point in that great city.

Figures compiled by the same authority show that in the proposed South Water Street improvement, estimated to cost $22,000,000 and which involves double-decking similar to the Michigan Avenue improvement, $11,000,000, or approximately 50 per cent of the total cost, is directly chargeable to double-decking, whereas, on the basis of time delays to individual vehicle movements,

To Reduce Street Congestion

The city plan should include a major street plan providing for ample traffic circulation between all parts of the community, with streets of sufficient number and width to constitute balancing of traffic movement and prevention of overconcentration at any one or more points.

Separation of commercial traffic from that of the pleasure automobile type is desirable and should be secured where possible.

No street should provide for more than eight lines of traffic. This does not imply that streets eventually intended to accommodate rapid transit lines should not be of sufficient width. Where possible this width should be 100 ft. for subways and not less than 200 ft. for elevated lines.

Safety isles should be provided at crossings for all six or more line roadways.

By-pass streets should be provided on all sides of the business district.

All approach streets to business districts hould be carried through the district.

*From article by J. Rowland Bibbins, published in ELECTRIC RAILWAY JOURNAL, Nov. 10, 1923, page 813.

TABLE I—RELATION OF VEHICLES REGISTERED IN FOUR AMERICAN CITIES TO DAILY TRAFFIC

City	Population 1920	Total Autos Registered 1923	Number Vehicles Entering Business District Daily: Passenger Autos	Auto Trucks	Horse-Drawn	Total	Number of Passenger Autos Entering Business District per 1,000 Population	Per Cent of Vehicles Which Are Commercial
Chicago	2,701,705	260,393	42,130	17,180	14,500	73,810	15.6	43.0
St. Louis	772,897	92,714	33,253	10,780	2,805	46,838	43.0	29.0
Pittsburgh	588,193	.....	32,416	20,554	7,545	60,515	55.0	46.3
Minneapolis	380,582	60,000	61,181	11,012	1,223	*77,727	162.0	20.0

*Error in addition in press copy received.—EDITORS.

TABLE II—COST PER MILE OF ROADWAY AND TRACK STRUCTURES NECESSARY FOR DIFFERENT KINDS OF URBAN TRANSPORTATION FACILITIES*

Kind of Transportation	Cost per Mile	Passengers per Mile to Pay Fixed Charges
Motor Bus	Cost per mile indeterminate because not furnished by the operating company, but by the municipality through direct and special taxes on other industries and individuals.	
Trackless trolley	$5,200	9,000
Single-track light traffic line	32,000	46,000
Double-track light traffic line	61,000	88,500
Single-track heavy traffic line	92,000	133,300
Double-track heavy traffic line	194,000	282,000
Two-track elevated, all-steel construction	540,000	486,000
Two-track elevated, steel and concrete	1,060,000	1,305,000
Double-track subway	4,800,000	5,570,000

* Estimates prepared for this article by W. E. Bennett.

the maximum justifiable capital expenditure was estimated at $3,000,000.* South Water Street is Chicago's principal produce center and naturally a busy and congested traffic center. If double-decking falls so far short of economic justification in a district of that kind, how much more unjustifiable it would be in other parts of Chicago's Loop and, for the same reason, unjustifiable in the business districts of other cities.

Decentralization Does Not Involve Economic Waste

The suggestions here made that we could secure maximum use of present street space and then reduce the volume of traffic by excluding unnecessary vehicle movements and supplementing these by relatively small improvements, the immediate cost of which would be justified, can properly be criticised as not in themselves necessarily constituting a final solution of the problem of street congestion in any given city, and increased per capita ownership of automobiles will sooner or later result in business districts becoming fully as congested with exclusively commercial traffic as they are now congested by other vehicles. There can be no answer to this criticism so long as we permit cities to concentrate business in a relatively small area served by a limited number of narrow streets where buildings of greater and greater height are permitted.

It is believed that the suggestions above offered will constitute a solution of the street congestion problem for a considerable number of years and do not involve economic waste. Beyond that point there is but one conclusion that can be reached—either our congested, overcentralized cities will eventually become victims of economic strangulation, or business must be decentralized. This may come about in several ways. There may be an ever-increasing number of business centers developed in various parts of the city's area, constituting a city of metropolitan organization composed of small communities, each with its own center. Or the huge central business district must be flattened out by rigid height restriction and spread over an increasingly greater area. Each of these things is taking place in certain cities today in a more or less haphazard manner. The community developments and business centers in the great metropolitan districts of New York and Chicago are almost as well known as the huge business and theatrical centers; even in St. Louis there are five or six rapidly developing business centers in different parts of the city.

In some cities also height limits for buildings have been established under zoning ordinances, but there are often more compromises between what should be a reasonable height limit and the unlimited freedom for skyscrapers desired by avaricious land owners, ambitious architects or sentimental enthusiasts. Not the least of contributing causes to our present chaotic situation is the tax assessor who continuously increases assessments, thereby causing property owners to resort to measures inimical to the city's interest. We need more scientific tax assessment methods co-ordinated with more scientific city planning and vigorous curbing of the practices which directly or indirectly contribute to the present problems of cities.

The writer recently had the great pleasure of participating in a study being made under the auspices of the Committee of the Plan of New York and Environs. One of the many considerations involved was approaches to Manhattan Island, with special reference to the Hudson River crossing. One vehicle tunnel is now under construction, a bridge and three additional vehicle tunnels are under consideration, estimated to cost something in excess of $200,000,000. This condition strongly emphasizes the ideas conveyed in this paper. If this bridge and the three tunnels across the Hudson are constructed, who will pay the $200,000,000? After they have been constructed how many more will be necessary? Would they solve any problem? It is the writer's contention that if they were all built and opened tomorrow, each would be crowded a week later and traffic congestion on Manhattan Island would be twice as bad as today. If, on the other hand, sufficient time and study were given to the computation of the necessary amount of intercourse between Manhattan and the Jersey shore, a definite amount of vehicle space might be determined upon and probably found to be easily justified, and a reasonable method of financing arrived at without the blind piling up of debt that now appears inevitable for want of a well-defined policy.

The matter of traffic regulation, while important, has not here been considered. This is a regulatory matter rather than one of fundamental principle in the broad problem of street congestion. Certain phases of traffic regulation might be mentioned in connection with this discussion, however, but in order that this paper may not be unduly prolonged, these may be stated briefly in connection with certain other conclusions as follows:

It is impossible to provide sufficient street space for all automobiles.

The provision of parking space in city streets is not a public obligation

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Curbs should be so adjusted as to permit maximum use of roadway space based upon lines of traffic.

Every city should have a comprehensive city plan.

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No street should provide for more than eight lines of traffic. This does not imply that streets eventually intended to accommodate rapid transit lines should not tbe given sufficient width, and where possible there should be 100 ft. for subways and not less than 200 ft. for elevated lines.

Safety isles should be provided at crossings for all six or more line roadways.

By-pass streets should be provided on all sides of the business district.

All approach streets to business districts should be carried through the district.

Unsatisfactory handling of traffic problems today is due to the lack of a centralized authority having complete responsibility in the matter of street congestion. The whole problem has virtually been thrown upon the police department as the agency best suited to cope with the situation. It would seem that for the establishment and enforcement of permanent policies there should be created a separate department or commission or agency which should at least be charged with the duty of studying the problem and which should probably also be charged with full responsibility in handling traffic. Street congestion is not necessarily a police matter. The problem is sufficiently great to warrant separate consideration and a separate authority. Just as we have developed health departments with a uniform force to supervise health matters, a fire department to handle fire and a police department to keep public order, it would seem that there should be a traffic department to cope with congestion and with the many other problems arising out of the universal use of the automobile.

*Estimates furnished through the courtesy of Jacob L. Crane, Jr., municipal engineer, Chicago, and C. D. Hill, chief engineer Board of Local Improvements, Chicago.

The Business of Government*

By ELIOT WADSWORTH
Assistant Secretary of the Treasury,
Washington, D. C.

BUSINESS MEN have direct interest in securing competent administrators of government business and should make that a part of their own affairs. Active support of Mellon plan of taxes urged. Street railway has shown enormous vitality. Relations with government better as understanding of business improves.

THIS convention is typical of hundreds of others. You meet here to exchange ideas as to the most up-to-date methods and practices of your profession—the management of street railways. There are conventions for the same purpose of nearly every known profession, trade and business to which people travel thousands of miles each year for the purpose of keeping themselves and their business up to date.

There is one line of business in the country which holds conventions, but not this kind—the business of government. With a gross annual income from taxes of $7,750,000,000, federal, state and local government make our greatest business operation. This is $72 a year per person or $288 for a family of four, which is a substantial item in any family budget. The amount of taxes collected in 1922 was three times the collection in 1912. This business of government has grown at no mean rate. The one way available of meeting its increasing expenses is by making heavier demands upon the taxpayer.

How Government Affects Business

It is safe to say that this money is all expended, and in addition one to two billion more borrowed each year to be expended on buildings, institutions, roads, schools and otherwise. The administration of these government units, from Washington to the smallest village, is in the long run the foundation upon which our entire business structure rests.

You have been talking all day of the problems of the street railway. I am going to talk of the government, using that term to include federal and local organizations. I want to point out how much government affects business and how the business of government could be benefited by the active attention of men who have business training and instincts.

As an official of the United States Treasury, I have seen something of the federal organization which expends over $3,500,000,000 a year. Taking a broad view, that much-talked-of government bureaucracy is a fairly effective machine and carries on with remarkable success and continuity. The employees, if at times underworked, are also in many cases underpaid. You who manage the street railways of the country come in contact with government officials from every conceivable angle. I have a feeling that you will concur, in a general way, with that statement when speaking of state, city and county governments.

You will get my meaning, perhaps, if you ask yourselves how often there is a breakdown in the water supply, the sewage disposal plant, a failure of the fire department to respond to a call, or a tardiness of the postman. You might add to that survey by thinking how often your tax bill has failed to arrive on time. At the same time you would not call these government operations strictly snappy and up to date. There are obvious reasons why this is the case which need not be enlarged upon.

Efficiency Depends on the Man

The efficiency of every organization depends upon the type of men who run it. As a life occupation, government employment has not been able to compete for the highest ability with the super-call of money making. Public interest in government can improve this situation by making government jobs more attractive and honorable.

As civilization becomes more complicated, government in one form or another assumes greater control of the individual and takes over more functions of the community. Each year sees our daily lives more closely guided by law and regulation, more dependent upon the operation of community property by government officials. Governments regulate food supply, traffic, hours of labor, dictate health measures and operate everything from a baby clinic to a graveyard.

The street railway offers a good example of increasing government regulation. Look back on the happy-go-lucky horse car, the service almost without schedule, the capitalization only limited by the sky. It is not necessary to point out how this has changed. You know too well. All the ingenuity available in state commissions, legislatures, city councils, county commissioners, not to speak of citizens with ideas, has been expended in trying to make the street car a limousine for the passenger and fool-proof for the lame, the halt or the blind, on foot, on horseback or on flivver.

The street railway has shown enormous vitality—its managers great ingenuity. The one-man car, light car and motor bus feeder have helped to win in a life or death struggle for existence. The street railway still runs, carrying more people today than ever before in spite of public and private motor competition. It is a remarkable record.

But the regulation has come to stay and you are constantly considering

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Eliot Wadsworth

problems of your business with government officials or commissions as intimately as though they were your partners. I am sure you will agree that just so far as these government representatives have an understanding of business, your relationship with them is more satisfactory, their regulation of you is more reasonable, and the results for the company and the public are better. That condition applies to every other industry touched by government regulation, and there are very few which are not.

When it comes to managing community operations, federal or local, the same type of ability is needed which makes a success in business.

Difference in Appointment of Manager

After all, there is little difference, from the community point of view, between the management of a corporation providing electric light, gas or transportation, under strict regulation, and the management by community of sewers, waterworks, schools and highways. There is a marked difference in the kind of men that do the managing. On the board of directors of the public service corporation there are always prominent business men of the community who serve without pay, attend regular meetings and give their time freely when called on. Hundreds, perhaps thousands, of stockholders of the public utility watch the financial returns and take a continuous interest in the welfare of their company. Effective management means regular dividends.

The general managers of the government business are appointed on election day, for a term sometimes as long as six years, with little chance of being discharged for inefficiency. Boards of directors, in the form of city councils, state legislatures and Congress, are also elected. The furious efforts of candidates for office stir a momentary interest among business men in these important selections. The bigger a man's business the less time he usually has for political activity, and yet the greater stake he has in the efficiency of government management. It is rather the usual attitude of business men that they cannot participate in

*Address presented at the Midyear Dinner of the American Electric Railway Association at St. Louis, March 4, 1924.

what is called politics, but which really is the management of community affairs. He hesitates to join the precinct, ward or state committee of his party, or to give some time to administrative work in the government. He pleads lack of time or that he is no good at that sort of work. Perhaps there is a little feeling that other business men will look askance at any one supposed to be "dabbling in politics," a phrase seldom used except in a slightly critical tone.

There should not be this difference. The government organization needs the methods and standards of successful business to yield dividends in the form of lower taxes and better service to the community.

Once in a while, some unusual occurrence focuses attention upon governments and their officials, a war, a financial panic, a police strike. People who have hardly thought of their government or its affairs for years suddenly realize their utter dependence upon the men whom they have in a most casual way elected to positions of authority.

Intense interest has been aroused in government affairs by the universal discussion of taxes and the Teapot Dome leases. The need of business men and methods in government was never more strongly brought out.

Tax Matters

The so-called "Mellon Plan" of tax reduction has focused public attention on a complete demonstration of the old saying that economy in government brings direct benefit to the taxpayer. This is not a new subject for orators, but it is seldom that the cause and effect are clearly associated in every mind. There may be a debate as to how taxes should be reduced. There is no question in any mind that the reason they can be reduced is because the federal government has cut expenses, shown a surplus each year and paid off part of the national debt. The figures should be repeated over and over again. They are the foundation of the Mellon tax plan.

THE NATION'S EXPENSES

Fiscal Years Ending June 30

		Surplus
1921	$5,500,000,000	$87,000,000
1922	3,800,000,000	314,000,000
1923	3,700,000,000	310,000,000
1924 (estimate)	3,600,000,000	330,000,000
1925 (estimate)	3,300,000,000	396,000,000

NATIONAL DEBT

Aug. 31, 1919	$26,596,000,000
Mar. 31, 1921	23,980,000,000
Jan. 31, 1924	21,842,000,000

A reduction of the nation's debt of $4,750,000,000.

This is all the result of good business management. In its operating departments the federal government has been given the greatest polishing and speeding up of its life. It has been done by business men. General Dawes and the crew he brought with him were all business men. They, together with the members of the Cabinet, have worked early and late to cut out useless activities and make more efficient those which are essential.

There is a dividend, in the form of lower taxes, coming to every citizen as a result of that work. Congress, as the board of directors of the nation, is now busy debating what form the dividend shall take. The people are anxiously pressing for action.

The so-called "Mellon Plan" for declaring that dividend was worked out by experts who have studied for months to determine the fairest and most constructive program for the good of every one. In advocating that plan, Mr. Mellon is not trying to dictate what should be done, but is seeking to show his reasons for considering that plan as the best. There has been no careful reasoning put forth in support of any of the other suggested plans which makes them appear better or more effective.

Need for Business in Government

When, in your business, you determine upon some new construction, some new service or financing, you ask experts to work out a plan, consider that plan from all angles, and then, if it looks sound and practical, carry it out. That is the business way—the best way. President Coolidge and Secretary Mellon, in insisting upon the Mellon plan, are only taking that same course. They consulted experts. They have considered the plan presented not only with those experts, but with thousands of citizens. They find an extraordinary feeling in its favor. They are fighting to have it enacted into law. If you want to help in that fight there is plenty to do.

The events connected with the leasing of the Teapot Dome have also centered attention on the government. I will not discuss them here except to say this: The President, Calvin Coolidge, has said that he would see justice done—the guilty punished according to the law, and the rights of the people protected. I, for one, am willing to trust his word and depend upon him to fulfill that statement to the utmost limit of his power.

But the facts disclosed cannot fail to emphasize the heavy responsibility resting upon executive officers. The enormous aggregate value of our national property is vividly demonstrated by the appraisal of this item, which is only one of many. The future of the country depends, in no small measure, upon the wise management of these great community estates.

Government Is the Business of the Voters

If it is so, and I firmly believe it is, that public attention is riveted on the problems of government, and the acts of its officers, what effect will this have on the elections of next autumn? Will the voters realize that the national and local governments are their own business, spending the money which they provide, managing the property which they have inherited and will in turn hand on to the next generation?

I should like to feel that this extraordinary situation would call for an unusual vote next November and that the measure applied to the candidates for office, from the President down, would be their fitness to manage honestly and efficiently the business of the nation. Is it too much to believe that the voters can supply the same standard of judgment, in selecting a public official, either as an executive or a lawmaker, that they would in selecting a trustee for their own estate or a guardian for their children?

This is not a new suggestion. It is as old as the hills, but I want to point out as clearly as words can why it applies particularly to the present conditions in America.

If the business community, and that means the storekeeper, salesman, farmer, laborer, clerk and banker, feel as strongly as I think they do on this question of government management, what can they do about it? Clearly they cannot all run for office, but they can vote and in other ways have an influence in politics. The political party is built up on a series of committees, beginning in the precincts, wards, villages and counties. These local committees largely control the type of men who become candidates and go to state and national conventions.

These committees do the political work of the community, just as a small group manages the affairs of every lodge or social club. By taking an interest and doing a little work, they are in a position to decide what shall be done and who shall do it. A strong man, serving on such a committee, particularly when not seeking office for himself, can multiply his influence many times by becoming part of the power which runs and directs the so-called political machine, of which we hear so much.

Industry Needs Efficient Government

The training and initiative which business experience alone can give must be made available to the management and building up of the organizations, which handle the all-important business of our governments. When it becomes as honorable to serve on these committees as it is to be a director of the chamber of commerce, the first national bank or the electric light company, business men will really make themselves influential in government affairs. In that way alone can government be put on a business basis and kept there.

We have object lessons enough in Europe of what a bad or weak government can do to its people. In the family of nations the United States stands out as a shining example of the benefits of sound management at a time when the older nations of Europe are tottering or have fallen from their foundations.

Public credit depends upon the ability and honesty of those who manage public affairs. Your industry—every industry—is dependent, in the long run, upon a stable and efficient government.

There are thousands of conventions like this held each year, all for the improvement of business methods, standards and profits. If the management of government is as important a factor in the business world as I believe it to be, then those conventions could well allow in their programs time for a discussion of government problems. Partisanship might be avoided, but if it could not, no harm would be done. The point is to focus attention on a business which is costing the people of the country $7,750,000,000 a year and improve its operation for the benefit of all.

Traffic Relief in Los Angeles*

By GEORGE BAKER ANDERSON
Manager of Transportation, Los Angeles Railway

THE TRAFFIC PROBLEM in this city results from the lack of usable street room. Suggestions for relief include rigid restrictions on vehicles in the central district, separation of street car and vehicle traffic, abolition of synchronized traffic signals and barring through commercial vehicles from the business district. Height limitations for office and mercantile buildings are proposed.

LOS ANGELES has now more than 1,000,000 inhabitants, and the Los Angeles Automobile Club's estimate of the number of automobiles in the city on Feb. 19, 1924, is 327,000. On the same date in 1918 the number was estimated at 81,500, showing an increase of 300 per cent in six years. During this same period the number of street car passengers has increased more than 100 per cent.

The city suffers greatly in comparison with other large cities in lack of roadway. The proportion of the business districts devoted to roadway in various cities is as follows: Washington, 44 per cent; San Diego, 41 per cent; Cleveland, 39.5 per cent; Seattle, 37.5 per cent; St. Louis, 37 per cent; San Francisco, 34.5 per cent; Pittsburgh, 34.5 per cent; Portland, Ore., 34.5 per cent; Minneapolis, 30.5 per cent; Detroit, 29.5 per cent; Chicago, 29 per cent; Denver, 27.5 per cent; Salt Lake City, 25.5 per cent; Toledo, 24 per cent; Los Angeles, but 21.5 per cent.

The city blocks in the business district measure 660 ft. north and south. These streets, curb to curb, average but 54 ft. in width. Some of the cross streets are too narrow to permit the movement of automobiles except on the car tracks if cars are parked, and there is a great insufficiency of alleys.

On account of the great area of the city—approximately 300 square miles—the average length of haul, 4½ miles, is greater than that in most cities.

In congestion by automobiles is found the most serious cause of delay to all forms of traffic. A check of the central business district, covering approximately ninety blocks, showing the movement therein of all classes of vehicles from 6 a.m. to 6 p.m. on Dec. 19, 1923, an average day, shows 263,110 automobiles, 48,556 trucks—a total of 311,666 automobiles of all classes—and 12,025 street cars. From 5 p.m. to 6 p.m. there was a total of 34,449 automobiles and trucks and 1,436 street cars. The average street car load for this period was 77.7 passengers and the average automobile load 1.67 passengers, including drivers.

During the twelve-hour period each person traveling in an automobile occupied in linear feet 14.3 times as much space as each passenger carried by street car. At 1.67 passengers per auto, to carry one average rush hour street car load of 77.7 passengers would require forty-seven automobiles, which, in solid line of contact, would occupy 660 ft., while a street car occupies but 45 ft. on the average. Two and one-half moving automobiles of average length occupy space of the same length as that of a street car, but the street car averages in the rush hour twenty times as many passengers.

Automatic traffic signals are located throughout about 50 per cent of the most densely congested district. The system consists of semaphores, one on each corner of the intersection, synchronized, and operated electrically from a central station. Under this system, as on Michigan Avenue in Chicago, much time is lost to all classes of traffic daily through holding up the flow in one direction when there is no traffic ready to move on the cross street.

Parking of automobiles is prohibited in the congested district from 4 p.m. to 6:15 p.m. only. During the remainder of the business day forty-minute parking is permitted.

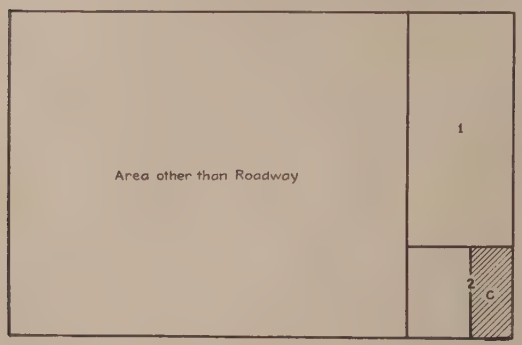

Fig. 1. The main rectangle illustrates the total area checked in the business district. 1, 2 and C represent the area of the total roadway, or 21½ per cent of the area district. 1 shows the roadway devoted exclusively to auto traffic, i.e., not street car tracks. This amounts to 76.1 per cent. 2 shows the roadway open to both autos and streeet cars, 23.9 per cent. C shows the proportion of roadway occupied by street cars in transit, allowing 4 ft. outside of the outer rails for clearance. Forty-one per cent of the roadway, or 9.8 per cent of the roadway area in the entire district, has car tracks.

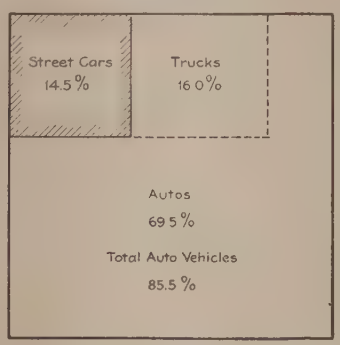

Fig. 2. This chart shows the apportionment of roadway in the entire district occupied by moving street cars, automobiles, trucks, from 6 a.m. to 6 p.m. on Dec. 19, 1923.

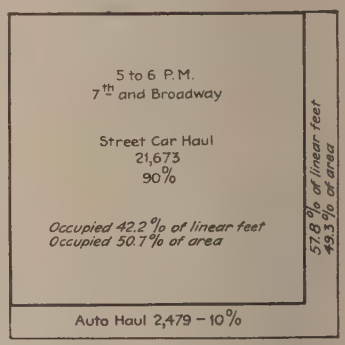

Fig. 3. Comparison of passengers carried, linear feet occupied and area occupied on one of the downtown lines by street cars and automobiles during the rush hour from 5 to 6 p.m. on an average business day.

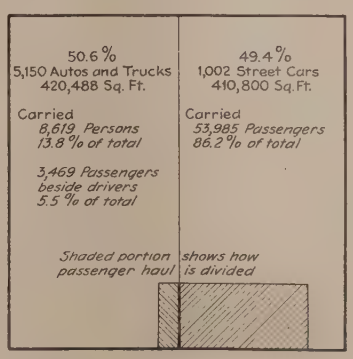

Fig. 4. Comparison of roadway space occupied and passengers carried by street cars and autos on the Seventh Street and Broadway Line from 3 p.m. to 6 p.m. on Nov. 13, 1923.

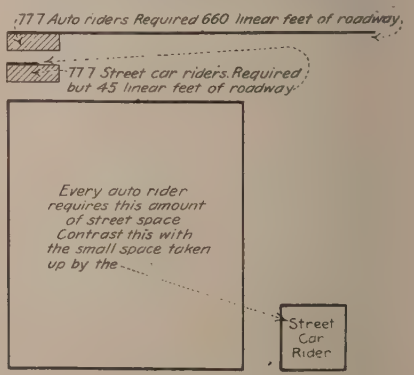
77 Auto riders Required 660 linear feet of roadway
77 Street car riders Required but 45 linear feet of roadway
Every auto rider requires this amount of street space
Contrast this with the small space taken up by the
Street Car Rider

Fig. 5. This chart is based on traffic north and south on Broadway passing Seventh Street between 5 and 6 p.m. Nov. 13, 1923, when 209 street cars carried 16,219 passengers and 735 automobiles carried 1,202 persons.

To carry 77.7 passengers by street car required 45 linear feet of roadway. The same number of passengers (including drivers) was carried by autos requiring 660 linear feet.

These Charts Have Been Used by the Los Angeles Railway to Illustrate the Relative Merits of Street Cars and Automobiles for Mass Transportation

*Abstract of paper presented at Midyear Meeting of the American Electric Railway Association, St. Louis, March 4, 1924.

In Los Angeles our big problem, so far as mass transportation is concerned, involving both street car and automobile traffic, lies in the lack of usable street room. The suggestions for relief that follow are based upon the conviction that in most cities transportation will continue to be conducted for a long time to come upon the surface, on account of the time required for the planning of a definite project acceptable to all interests and the tremendous capital investment required for the construction of adequate subway or elevated systems, or, as probably will be found advisable in Los Angeles, a combination of both.

PROPOSED REMEDIAL MEASURES

First—Separate the two classes of traffic in business districts. Either (a) set aside certain streets for the exclusive use of automobiles and other streets for the special or adequately protected movement of surface cars; or (b) set aside a portion of all streets on which there are car tracks for the exclusive use of each class of traffic so that there will be no unnecessary interference between the two. This would be a chief measure of relief for the heavily traveled business district.

Second—Separate traffic outside of the business area as far as practicable by providing numerous boulevards for automobiles exclusively. On streets equipped with tracks for main car lines confine automobiles to the area outside the tracks, and as far as practicable restrict the use of this space to automobiles whose destination is on such street and those needing to cross it. Allow right angle crossings and right turns only so far as practicable.

Third—Separate automobile traffic into two classes, slow moving and rapidly moving vehicles, and keep the slow moving vehicles as close to the curb as practicable. Prohibit the use of streets in the central business district by trucks, delivery wagons and horse-drawn vehicles during the hours of the heaviest mass transportation. Prohibit parades of all kinds at all hours within the confines of any business district. Establish a maximum speed for slow moving vehicles and a minimum speed for fast moving vehicles traveling on boulevards set aside for the use of such vehicles.

Fourth—Protect main trunk line boulevards and main avenues occupied by car lines by the boulevard stop system. Ohio designates all streets and roads used by electric railways as main thoroughfares, gives vehicles and street cars using these thoroughfares the right-of-way over those entering intersections. An editorial in the ELECTRIC RAILWAY JOURNAL of Oct. 6, 1923, on this matter is very much to the point.

Fifth—Establish raised loading platforms in all sections where traffic is most heavy. They should not be closer together than 660 ft. on the average and should be established without specific relation to street intersections where necessary to secure fairly even spacing, making permanent the skip stop. The erection of these platforms would permit automobiles to keep moving when street cars stop. Prohibit automobiles from driving to the left of the safety platforms in congested districts, thereby permitting cars to berth and unload passengers at these points without interference from automobile traffic.

Sixth—Abolish parking of automobiles in the congested district from 7 a.m. to 7 p.m. every day, with the possible exception of Sundays and legal holidays. Elimination of parking is the cheapest way to provide additional roadway space. In outlying districts prohibit parking for at least 30 ft. back of street car loading zones. In the business district prohibit the stopping of automobiles to take on and discharge passengers at least 20 ft. back of loading zones. This would prohibit United States mail wagons from collecting mail at corners and would automatically result in the changing of the location of mail boxes to other points.

Seventh—Abolish all synchronized automatic crossing signal systems. Where it is found advisable to control the flow of vehicular, street car and pedestrian traffic at an intersection with the aid of mechanical devices such as semaphores, place the control in the hands of a traffic officer, who will operate the mechanism controlling one or more blocks as the needs of various avenues of traffic demand. The flow of pedestrian traffic at all points where mechanical signaling devices are installed, or where a traffic officer is stationed, should move in the same direction and at the same time as other classes of traffic.

Eighth—Prohibit left turns at all points in the heavily congested district, including turns out of alleys, garages, oil stations, parking places, etc.

Ninth—Limit the width of commercial vehicles of all classes.

Tenth—Route outside of the congested district all commercial trucks having no collections or deliveries to make in that district.

Eleventh—Route police and fire machines where possible by flasher signals.

Twelfth—Limit the height of office and mercantile buildings, thus avoiding a measure at least of the danger of overcrowding any section. Had no limit been placed upon the height of buildings erected in Los Angeles, long before this we would have been faced with the necessity of forcing a very generous staggering of business closing hours.

Thirteenth—Secure statutory enactment providing for the examination of applicants for drivers' licenses, requiring all applicants to show that they are over eighteen years of age, understand the important features of the traffic laws, have reasonably correct sight, are of sound hearing, of sound mind and are in generally proper physical condition to operate a car with safety.

Accompanying this paper will be found a set of charts based on the traffic survey made in Los Angeles Dec. 19 and 20, 1923.

*Suggestions for Relief of Street Congestion**

By R. F. KELKER, Jr.
Consulting Engineer, Chicago

Chief causes of congestion in all cities outlined—Prime factor in present congestion is traffic to and from high buildings—Building heights should be limited as measure preceding rapid transit, and parking should be prohibited—Elevated or depressed sidewalks, one-way streets, traffic signals, etc., do not provide major relief.

UNTIL recent years street congestion has not assumed sufficient importance to warrant a thorough investigation, consequently many superficial plans of relief have been suggested and put into effect. Those who have had the opportunity to study the situation more closely have come to realize that an effort must be made to strike at the fundamental causes of street congestion. It therefore seems appropriate to set out briefly the chief causes that underlie the conditions which are found in all our cities from coast to coast.

1. Centralization of commercial, civic and social activities which result in (a) construction of excessively high buildings within comparatively small areas, and (b) the overpopulation of these areas through business hours.

2. The astonishing increase in motor vehicles in recent years, which has been without parallel in any other form of unit using the streets.

3. Inadequate width of roadways, rendered so by the volume of motor vehicle traffic, which could not have been foreseen at the time of dedication.

4. Deficiency of through streets and alleys because of vacations of public property at a time when value was low, and lack of co-ordination of subdividers at time dedications were made.

5. Interference with circulation by railroad terminals and yards, by rivers and other unfavorable topography.

6. The attempt to move all classes of traffic—freight, passengers and pedestrian—upon a single traffic plane.

7. Unrestricted parking of vehicles, which results in devoting a considerable portion of street space for the purpose of storage of privately owned vehicles.

8. Failure to adjust street car routing to meet present traffic conditions in so far as service conditions may permit.

9. Infractions of traffic regulations.

The principal effect of traffic congestion is economic loss and, as has

*Abstract of paper presented at the Mid-year Meeting of the American Electric Railway Association, St. Louis, March 4, 1924.

been pointed out by Mr. Bartholomew, this loss in a congested area of Chicago is roughly estimateed at $60,000,000 per annum. Add to this loss similar losses in other large cities and we have a tremendous loss for the nation. Beyond this loss, however important it may be, we must also measure the inconvenience, and at times hardships, to which the public is subjected by traffic congestion and its effect upon health, as well as the thousands of hazards that it creates. The story is the same in all cities and there are few civic matters which are more in need of thorough investigation.

In Chicago we have in the Loop district about 300 sq.ft. of private occupational area for each 100 ft. of roadway space, exclusive of sidewalks. Consequently this 100 ft. of roadway space would in all probability adequately serve 1,500 sq.ft. of building area, as measured by the number of floors.

Many approximations of the relation of traffic demand and population have been made, and it is generally conceded that the increase in traffic demand varies between the first and second power of the increase in population. These powers at least seem reasonable limits.

Assuming as a normal condition 100 sq.ft. of roadway space, five-story buildings and 1,500 sq.ft. of occupational area, then we may estimate the equivalent traffic values for floor space for buildings of greater height, by using the powers representing traffic demand. The following table shows the traffic demand on this 100 sq.ft. of roadway for buildings of various height:

Number of Floors	Equivalent Traffic Demand — 1st Power	1½ Power	2nd Power
5	1,500 sq.ft.	1,500 sq.ft.	1,500 sq.ft.
10	3,000 sq.ft.	4,250 equivalent	6,000 equivalent
15	4,500 sq.ft.	7,800 equivalent	13,500 equivalent
20	6,000 sq.ft.	12,000 equivalent	24,000 equivalent

The average height of buildings in the Loop district in Chicago has been estimated at ten floors, which I believe is rather in excess of the fact, but we know that the traffic congestion resulting from buildings of this average height has produced extremely unsatisfactory conditions. By referring to the table we see that the traffic demand of ten-story buildings on the basis of the first power has been doubled and on the basis of the second power has been quadrupled. Therefore there should be no reason for surprise if congestion exists. For twenty-story buildings, which are permissible in the central district in Chicago, the volume of traffic would lie between four and sixteen times the normal loading, or, expressed in square feet, between 6,000 and 24,000. These figures show that the percentage of roadway area, considered from the point of view of traffic demand, is so small as almost to vanish. Consequently, it is certain that the prime factor in present street congestion is the traffic that flows to and from our high buildings, and the cost that the general public bears through loss of time and inconvenience is enormous.

The solution applied in New York by building rapid transit lines to reduce street congestion brought about by the erection of high buildings, aside from other very definite benefits, has not been of marked success, and the overburden of the enormous cost of rapid transit construction is appalling, particularly in view of the fact that the congestion still persits. I do not take the position that rapid transit construction is not worth while; it is vital to the well being of any large city. But I believe that in order to prevent unusual and disastrous congestion the limitation of the height of buildings must be made effective before rapid transit on a large scale is undertaken.

Therefore, I believe that the first step to prevent the increase in congestion, which is inevitable by reason of the growth of vehicular traffic and of improved transportation facilities, is strictly to limit the height of buildings and to make this limitation as low as is consistent with the height of existing structures and street spaces available for traffic purposes.

Prohibition of Parking

In regard to the present moment, the most convenient way to bring about relief is to prohibit parking where it interferes with the proper movement of commercial and passenger carrying vehicles. The annoyance to which street car riders are subjected in all cities is great, and I have never been able to understand why the street car patrons do not support prohibitive parking measures. It seems unreasonable that a comparatively few people can utilize the most valuable street space in our cities, practically at will, for their own pleasure and convenience and to the serious inconvenience of thousands of their fellow citizens.

Many cities have adopted restrictions more or less drastic in their nature which have had certain beneficial results. The difficulty of enforcement is one of the chief troubles with parking prohibitions, and it has been found that limiting the time of parking to a half hour or to an hour does not do away with the nuisance. The construction of public garages by the city has been suggested many times, and I see no reason why cities should not build enormous garages for storage at the taxpayers' expense and make no charge at all for the service, as this would be entirely consistent with maintaining unlimited parking space in the most valuable streets in the city.

The statement has frequently been made that the prohibition of parking is unjust because it is a type of class legislation. This, I believe, would be a statement of fact if in the central areas of our cities all of the cars in the district could be parked and everybody would have a fair chance. In the Loop district in Chicago there is, roughly, space at the curb to accommodate about 3,300 cars, and there are more than 250,000 cars in Chicago and the immediate suburbs. For the reasons above stated I believe the prohibition of parking in the central business districts during all of the business hour of the day is the most effective means of obtaining immediate relief, and without cost.

If any city adopts this principle for its central district it then should be applied in any other part of the city where the passenger carrying vehicles are delayed by parked cars. There are thousands of feet of curb space everywhere adjacent to main arteries, car line streets and business areas which are open to the automobile public for the purpose of parking. For a person to walk a few hundred feet is not a hardship, but when his activities delay the movements of hundreds or thousands of people he then should be compelled to make this contribution to public welfare.

The work that has been done by planning commissions and planning engineers throughout the country has been very commendable and the opening up of new major arteries, widening of streets, removing various classes of restrictions, together with planning for future traffic movements, has been and will be of great benefit in many cities. All of this work, however, will be rendered partly valueless unless the building limitation situation is taken care of and prohibitive parking legislation adopted and enforced. There are enough vehicles now in any city to completely fill the streets in the business district from curb to curb and there is also enough land to be improved to accommodate high buildings that will destroy the benefits of city planning.

We are all familiar more or less with the various expedients that have been suggested for congestion relief, such as sub-surface sidewalks, elevated sidewalks, bridges, subways, etc., all of which are supposed to remove the pedestrian from his present hazardous location. Their utility depends wholly upon the establishment of a transportation plane with reference to a traffic plane. If elevated sidewalks are adopted for pedestrians then other forms of public passenger carrying vehicles should move on the same plane, if any real benefits are to be derived. Similarly, if sub-surface sidewalks are to be utilized they will be effective only when they are made an integral part of an underground transportation system. Further, the methods of financing such improvements should be very carefully considered prior to their adoption.

Regulations which provide for one-way streets, prohibition of left-hand turns, etc., installation of traffic signals and the like, may prove desirable in controlling traffic movements where unusual conditions exist, or at special locations where control is necessary. Such attempts for relief do not strike at the root of the matter and cannot be considered properly as major measures for relief.

In order to correct congestion which arises from unbalanced traffic conditions the provision of one-way streets is desirable. At certain intersections the prohibition of left-hand and sometimes right-hand turns will prove worth while, provided, however, that there is adjacent street space eventually to handle the increased mileage. Traffic signals afford the maximum benefit to the pedestrian, and there are locations where, in the interest of his com-

fort and in the interest of safety, they should be installed. It must be borne in mind that the control of traffic by automatic signals will reduce speed, and consequently their operation causes the motorist to contribute to the general welfare of pedestrians on the streets.

To sum up, permit me to suggest that support be enlisted everywhere to secure a reasonable limitation of building heights and to the prohibition of parking where the interests of thousands are sacrificed by the convenience, real or imaginary, of the comparatively few.

As further aids for unusual conditions, the adoption of appropriate regulations is recommended, and above all, support should be given to the enforcement of all sound traffic regulations which are adopted in the interests of safety and general welfare.

*Improving Traffic Conditions in Cleveland**

By JOHN J. STANLEY
President Cleveland Railway

THE lamentable facts concerning the whole matter of traffic congestion are that it has taken so long to awaken business men to its ill effects, and that the situation has been permitted to reach a critical condition before any active interest has been shown by communities as a whole. The problem divides into two distinct parts: (1) The adoption of laws, restrictions, etc., which will remove, as completely as possible, any causes increasing and intensifying the situation; (2) the adoption of measures both regulatory and constructive which will relieve if not solve the problem as it is today.

The handling of this matter by one centralized authority, as recommended by Mr. Bartholomew, is to be commended. Such authority may be in the form of a commission or may be an individual, but it should be solely responsible for the handling of all traffic problems as related to the congestion of streets and to the transportation of passengers from one section of the city to another.

I wish to express my approval of Mr. Bartholomew's views on decentralization. This only will succeed in reducing the rate of increase of congestion. While automobiles and high buildings are the main causes of traffic difficulties, there are other contributing causes which are by no means negligible. Greater spread of a business district of any city requires many people to travel greater distances between their homes and offices and between offices in the course of a day's business.

The second division, to which the great majority of traffic students have been giving their attention, is the relief of existing congestion. Before taking up any detailed points concerning this I wish to set forth one warning, namely, that this is not a mathematical problem which once solved is always solved. Constantly changing conditions, many of them beyond the control of the city planners, alter the situation and its intensity. These changes cannot be accurately forecast, therefore plans which may be made for the relief of congestion should be so formulated and carefully laid out as to co-ordinate with probable future requirements. This will be possible only through an authority which has the power and ability to handle the problem as a whole.

REGULATORY MEASURES to relieve the existing conditions of street congestion should be enacted, but the underlying causes should be removed by suitable laws and restrictions. Synchronization of traffic, prohibition of parking, one-way and restricted streets are among remedies proposed for immediate adoption. The writer holds that traffic will have to be limited in future as population grows.

BOTH LEGISLATION AND ENGINEERING PROGRESS CAN REDUCE CONGESTION

In taking up some of the methods which have been advocated for the relief of existing traffic congestion, I wish to divide them into two general classification: (1) Those which are confined to ordinances, regulation and enforcement and do not require any physical changes or engineering construction; (2) those based largely on engineering projects.

Under the first heading will come all laws relating to parking, synchronization of traffic, the prohibition of either truck or pleasure vehicles on all or certain of the streets of congested districts, enforcement of majority as well as seniority rights for street cars, the adoption of arterial highways and boulevard stops, the staggering of store, office and factory hours, the rigid prohibition of careless driving, rigid enforcement of all laws and the education of the traveling public. All of these are forms of relief of existing traffic conditions. They have been the subject of considerable thought by city authorities, street railway men and others.

There are some points which Mr. Bartholomew has mentioned which require comment. First, with regard to parking. From the standpoint of street railway men parking is one of the most serious handicaps to good service. The advantages of strict enforcement of no-parking ordinances has been clearly illustrated in Cleveland during the present year. With the inauguration of the new city administration under the manager plan, the authorities started an immediate campaign for improvement of traffic conditions, and called a conference of citizens including representatives of all organizations interested in the traffic situation. As a result of this conference and at the instigation of the Cleveland Railway orders were given to the traffic department of the police force to enforce rigidly all existing traffic ordinances.

One of these ordinances concerned parking on Euclid Avenue, the busiest street in the city. The ordinance permitted one-hour parking during the base hours of the day, but prohibited parking on the inbound or north side of the street from 8 to 9.30 a.m. and on the south or outbound side of the street from 4.30 to 6.30 p.m. in the congested district. The effect of the enforcement of this ordinance on the operation of the Euclid Avenue cars was immediate and gratifying. Cars which had been reaching the end of the line in the evening rush hour fifteen or more minutes late lost comparatively little time. The same result was apparent in the morning but to a lesser degree, because the morning rush is not so marked as that in the evening. The Cleveland Railway has for a long time advocated no parking on the downtown streets on which car lines are operated, but up to the present the city administration has not been impressed with the necessity for this move.

PARKING SHOULD BE PROHIBITED

The reduction of the time limit for parking has been the subject of much discussion. Many cities are reducing the time limit to less than an hour and in one case ten minutes has been suggested. I realize that there are several points of view on this subject and am, personally, firmly convinced that parking should be prohibited at all times in the terminal districts of the larger cities. A careful analysis of automobile collisions on some of the busy thoroughfares of Cleveland indicates that 80 per cent are directly or indirectly caused by the automobile being permitted to park. If parking is permitted at all, from the standpoint of street railway operation I believe that all-day parking is preferable to short time-limit parking. The latter means many entries and exits from any one parking space. At each entry or exit other machines operating in the street are delayed or forced onto the car tracks, with resulting delay and danger of accident.

Mr. Bartholomew has suggested the rerouting of street cars so as to eliminate left-hand turns. Where no traffic officer is stationed right-hand turns are less conducive of congestion than left-hand turns, but careful analysis shows that the difference is not great, if we consider street cars only. On the other hand, the routing of loop lines so that the majority of turns are right-hand requires one left-hand turn and a crossing of the lines themselves.

*Abstract of discussion presented at the Midyear Meeting of the American Electric Railway Association, St. Louis, March 4, 1924.

The separation of street car and automobile streets would greatly facilitate traffic and from the standpoint of the street railway operator is a decided benefit. In fact, if it can be carried to the extreme and all automobiles kept off of the streets designated for street car use, it is equivalent to the grant of a virtual private right-of-way to the transit company.

Much more probable of adoption is the one-way street system, concerning the advantages of which there is considerable difference of opinion among traffic students. Most of our large cities have adopted one-way streets to a greater or lesser extent. Philadelphia and Pittsburgh are notable examples of cities in which some of the principal retail business streets are designated as one-way streets.

It seems certain that the volume of traffic in the business districts of our great cities must be limited by some means in the near future. This limitation is to some extent automatic. In small cities of less than 100,000 population a large proportion of automobile owners drive to work. As the population increases this proportion decreases, due to the limitation of space available for all-day parking, and to the exasperation and danger from accident connected with driving in the congested district. These tendencies are favorable, but further limitation must be provided.

Prohibition of Certain Vehicular Traffic May Be Necessary

Of the four forms of traffic using the street space between curbs, viz., street cars, passenger automobiles, trucks and motor delivery wagons, and horse-drawn vehicles, it has been suggested that two may be prohibited, at least during congested hours. Mr. Bartholomew has suggested the prohibition of the use of streets in the congested district to passenger automobiles, and Barron Collier has suggested that trucks, delivery and horse-drawn vehicles be excluded during day hours.

The rights of building owners must not be overlooked when considering no-parking or no-stopping ordinances, one-way streets and prohibition of the use of streets to any type of traffic. It is doubtful if a law prohibiting the stopping of automobiles in front of any property would stand the test of a court action if the building owners should attempt to enforce their rights. This, then, resolves itself into a question of to what extent property owners consider that the prohibition of parking and stopping benefits or harms their business when the results, as a whole, are taken into account.

From the standpoint of the street railway operator, subway or elevated construction is far more desirable and effective than street widening because it provides a private right-of-way totally free from the interference of any other form of traffic. The construction of subways and elevateds, the arcading of buildings and the widening of streets are very expensive and should not be attempted unless economically justified. The question of the dollars-and-cents justification of subway and elevated lines is very difficult to determine. Experience has shown that within a very short time after a new street or rapid transit line has been opened it is used to capacity. Does not this in itself prove that it was justified? Even though a great deal of the traffic was invited traffic and perhaps not essential, has the improvement not been justified?

In computing the additional rides necessary to pay the cost of subways and elevateds it does not seem wholly fair to base the computation on the prevailing rate of fare on the surface lines. The relief of street congestion, greater operating efficiency, relief from delays, higher average speed of operation and better service in general are worth something, and I believe that the public is becoming sufficiently enlightened to pay willingly for such additional benefits.

As a general thing subways enhance property values, elevated lines depress values. Enhanced property values to some extent will help pay for subway construction, but the excessive cost of subways as compared to elevated lines per unit of length (approximately four times) in many cases warrants the construction of the latter even though property damages may be considerable. The present and probable future type of district must be considered in rendering a decision as to which type of construction is desirable. It must be remembered, in considering subways and elevateds, that it is not always possible to remove all cars from the surface of the street.

In any discussion of traffic questions the problem of maximum allowable speed as related to congestion should not be overlooked. It is evident that as great speed as is consistent with safety is desirable. Just what limit of speed will give the desired results is dependent upon local conditions and cannot be determined except by studies of these conditions. The adoption of the lane method of segregating traffic will materially improve the situation.

Educate the Average Citizen

One objective toward which we should all direct our endeavors is the education of the average citizen as to his own personal loss, even though it be only a matter of time, due to traffic conditions and to his responsibility in the relief of the existing conditions. The Cleveland Association of Building Owners and Managers has taken a forward step in this direction. As a result of the conference called by W. R. Hopkins, City Manager of Cleveland, a committee of this association has made careful surveys of traffic congestion. This organization has approached the subject with a broad and unselfish attitude. In its report it has emphasized that the streets were not designed for their present purposes, and that the immediate problem is to fit the traffic to the street. It states that all-day parking should be prohibited on all streets in congested areas and that limited parking of not more than one hour be permitted in such built-up districts, except that parking should be entirely prohibited on narrow streets and alleys. The committee recommends the appointment of a traffic commissioner with the necessary assistants who should devote their entire time to the study and improvement of traffic conditions.

The results of such an attitude by this body should be far-reaching. Complete realization by business men and the traveling public of their own part in the traffic problem and co-operation on the part of all would improve the situation immensely.

Many Committees Hold Meetings at St. Louis

IN CONNECTION with the Midyear Meeting of the American Electric Railway Association at St. Louis this week a number of important committees held sessions. These included the American executive, subjects and meetings, convention date and location, company and associate membership, insurance valuation, Transportation & Traffic executive, traffic congestion, automatic substations, purchases and stores, co-operation with manufacturers, Claims executive. Reports of these meetings are given below.

American Executive Committee

The executive committee, American Electric Railway Association, held a regular meeting at St. Louis on March 3. Members present were President B. I. Budd, Secretary J. W. Welsh, Gen. George H. Harries, W. V. Hill for Paul Shoup, W. H. Sawyer, C. E. Morgan, R. P. Stevens, J. N. Shannahan, C. L. Henry, J. H. Hanna, Harry Reid, F. R. Coates, L. H. Palmer for C. D. Emmons, H. A. Johnson, E. M. White, E. F. Wickwire, H. D. Shute, J. G. Barry, A. A. Hale and C. R. Ellicott.

Mr. Stevens reported for the finance committee. For the policy committee, Mr. Shannahan reported on the request of the Claims Association for the employment of a safety engineer for the headquarters staff. He said the budget this year does not provide for this expense and that it is the feeling that the association is not warranted on present revenues in taking such a step. He thought also that the present staff is better able to do this work than was thought by the Claims Association. President Budd commented that he doubted the wisdom of the association starting on a program of hiring specialists. The request was disapproved by the committee.

Mr. Henry reported for the committee on national relations. He spoke of the introduction of House Bill 7040 which would create a 2½-cent coin and providing that one-third of the number minted would be Roosevelt coins, one-third Harding coins and one-third in memory of Wilson. Mr. Henry desired to know the position of the committee with respect to this bill. After some discussion it was decided to refer the question to the policy committee for study and report at the next meeting.

The demand for these coins rises from the Women's Roosevelt Memorial Society and it has no business backing, it was said.

The membership, subjects and meetings, publicity and midyear dinner arrangements committees reported briefly.

Mr. Shannahan presented the recommendations of the committee on location and date of the next convention, that the convention be held at Atlantic City during the week of Oct. 6, and with exhibits. The executive committee adopted these recommendations with the proviso that they were subject to the ability of the entertainment and exhibits committees to come to a satisfactory agreement with the Atlantic City people.

E. M. T. Ryder appeared before the committee to secure approval for expenditure of the money appropriated for building a rotary joint testing machine, in making tests of another nature. The engineers had questioned whether the machine would provide reliable data, and it cost too much to build. The committee did not approve the recommendation.

Mr. Wickwire told of the latest efforts of the committee on co-operation of manufacturers and emphasized the need to keep up the work and to persist in the publicity work. Mr. Budd reinforced this by saying that any company that was not doing its part in publicity and education work was derelict in its duty to the industry and to itself. He said every railway executive ought to demand from his board of directors an appropriation for publicity and advertising purposes.

The next meeting will be held in New York on April 11. The meeting after that was tentatively set for May 8 or 9 at Cleveland in connection with the meeting of the U. S. Chamber of Commerce.

Insurance

A meeting of the committee on insurance was held on March 3, at St. Louis. Those attending the meeting were: J. T. Staub, chairman; O. H. Bemd, G. H. Bourne, B. J. Denman, C. H. Fahrney, C. E. Morgan, C. B. Scott and Paul E. Wilson.

The minutes of the meeting held in New York on Dec. 14 were reviewed. Substantial progress was indicated by the reports of the sub-committees and it is believed that a report of much value to the industry will result from the committee's work.

Automatic Substations

A meeting of the special committee on automatic substations was held at St. Louis on March 3.

Members present were: W. E. Bryan, chairman; E. H. Scofield, A. Hughes, Jr., F. W. Peters, C. A. Butcher, R. H. Rice and L. D. Bale. L. N. Van Hook later represented W. E. Bryan.

Mr. Bryan called the meeting to order and after a brief summary of the work of the committee up to date was compelled to leave due to serious illness in his family. L. D. Bale then acted as chairman pro tem.

Messrs. Scofield, Rice and Bryan presented discussions pertinent to the report. Each of these discussions was covered in detail by the committee.

During the lunch period, the committee visited the Maple and Evans Avenue automatic substations of the United Railways of St. Louis, which have just been placed in operation.

Claims Executive

President W. H. Hyland presided at a meeting of the executive committee of the Claims Association at St. Louis on March 3, at which the following members and guests were present: L. F. Wynne, J. S. Kubu, S. J. Herrell, G. T. Hellmuth, C. B. Proctor, C. B. Hardin, G. C. Hecker, T. C. Neilson, S. G. Shaw and F. H. Warren.

A letter from Mr. St. Clair of association headquarters on the subject of preparing a safety code book was read. The committee voted to approve its preparation and recommended that the parent association assign the different parts of the work to the various affiliated associations for the preparation of their respective parts of the material in such form that it could be combined, edited and published by headquarters.

It was decided to discontinue the question box as a part of this year's annual convention program. Mr. Hecker suggested that manuscripts of papers and discussions sent to authors for editing be cut to the valuable essentials in order to reduce the cost of the final proceedings. Mr. Hellmuth reported that the request of the association for the appointment and assignment of a special safety engineer was transmitted on Jan. 11 to the executive committee of the parent association, and President Hyland stated that the executive committee had decided not to make the appointment.

A motion was passed providing that the committee on subjects consist of three members, and that they be appointed for one, two and three years respectively, but giving the president power to reappoint a retiring member when necessary.

Co-operation of Manufacturers

Steps which can be taken by the manufacturers in co-operating on publicity was the subject of the discussion by the committee on co-operation of manufacturers of the American Association at the meeting held at St. Louis on March 3. In addition, new subjects for the extension of the "Traction Tom" posters for use by railways, and the posters for use by both co-operating manufacturers and railways, were discussed.

It was reported that the list of co-operating manufacturers had been increased from 137 on Jan. 11 to 157 at the present time. In approaching the manufacturers in a given community it was suggested that they could be effectively reached by the local member of the committee in some cases through luncheons at which they could be addressed collectively.

The possibilities of special publicity addressed to the local business men in a given city who are directly affected by railway operation, as for example real estate dealers, were outlined by Mr. Wickwire. This it was thought, could be very effectively handled by a co-operating manufacturer. In addition it was also pointed out that a member of the committee could frequently be instrumental in obtaining the assistance of sectional manufacturers' associations in securing fair treatment of the railways by regulatory commissions.

Purchases and Stores

The meeting of the committee on purchases and stores of the Engineering Association held at St. Louis on March 3 was attended by J. P. Dick, chairman; C. A. Harris, Harry Lloyd and W. N. Ford.

Of the three subjects assigned to this committee for study, that of determining the proper place of the purchasing and stores department in an operating company's organization was submitted in tentative form for inclusion in the committee's report.

C. A. Harris reported for the subcommittee on the preparation of a standard method of classification and sale of scrap materials. This work was carried out to fit the requirements of the average sized property. It was felt that such a classification should be made as simple as possible and should be subdivided only to the extent necessary to take advantage of price differentials on those materials which accumulate in carload quantities within a reasonable time. As a result the committee was able to prepare a tentative classification of approximately forty-five different kinds of scrap.

It was agreed that with such a classification as a working basis, the smaller properties would be able to cut down the number of items in accordance with their conditions and the very large roads would make such additions as were required to cover materials handled in sufficient volume to justify further separation. The sub-committee decided, however, to include in the report a list of the principal items of scrap materials coming under each of the classifications.

As the sale of scrap without agreement regarding time and point of final acceptance frequently leads to controversy and serious loss through rejection after loading or shipment of material, the committee was agreed that inquiries should require inspection of material before bid is made, and that such acceptance should be included as a part of the contract at the time it is signed.

Company and Associate Membership

This committee met at St. Louis on March 3 and laid preliminary plans for bringing into the association railways not now members. The work will be divided among members in various parts of the country and a mail campaign supplemented by personal solicitation. Members present were R. P. Stevens, chairman; K. A. Simmon, E. P. Waller, E. M. Walker, John Dewhurst, F. C. J. Dell and Harry L. Brown.

Valuation

The committee on valuation of the American Association held a meeting at St. Louis on March 3. Those present were F. W. Doolittle, acting chairman; W. B. Tuttle, L. R. Nash, E. J. Bechtel, W. H. Maltbie, Frank Silliman, Jr., F. M. Brinckerhoff, T. E. Francis, Mr. Bennett and E. J. Murphy of association headquarters.

Mr. Francis presented a report as chairman of a sub-committee on terminology, in which it was pointed out that there are several ambiguous and unfortunate terms in use that should be standardized. It was stated that further study will be given this subject.

It was reported by Mr. Maltbie that he sees no reason for changing the practice in reporting court and commission decisions.

A preliminary report written by Dr. Conway was read by Mr. Nash of his sub-committee, giving methods that should be used in assisting courts and commissions toward arriving at a fair idea of what should constitute a rate base.

Subjects and Meetings

This committee met at St. Louis on March 3, for the purpose of drawing up a tentative program for the next annual convention. The members present were Britton I. Budd, chairman; Frank R. Coates, Gen. George H. Harries, Edwin C. Faber, J. W. Colton, Harry L. Brown, H. A. Johnson, J. W. Welsh.

Subjects which will probably be parts of the program are customer ownership, traffic congestion, value of the railway to a community, modernization, bus and rail co-ordination, publicity. These subjects, if they remain on the final program, will be treated from a different angle than heretofore.

Convention Date and Location

Meeting at St. Louis on March 2, this committee thoroughly canvassed the situation and decided to recommend to the executive committee that the next annual convention be held at Atlantic City during the week of Oct. 6 and that exhibits be held. This recommendation was made subject to the ability of the exhibits and entertainment committees to secure satisfactory terms. This choice of the committee reflected the sentiment widely expressed throughout the country.

The members present were J. N. Shannahan, chairman; J. W. Welsh, F. C. J. Dell, Col. A. T. Perkins, W. H. Heulings, Jr., Paul Wilson, C. E. Morgan, L. W. Shugg, J. H. Hanna, C. L. Henry, J. C. McQuiston, H. L. Brown and Mr. Royal.

Transportation and Traffic Executive Committee

This committee met at St. Louis March 3 with First Vice-President T. C. Cherry presiding in the absence of President Punderford. Other members present were G. H. Clifford, J. V. Sullivan, E. M. Walker and Samuel Riddle. It was decided that hereafter questionnaires should be submitted to the executive secretary before being sent out, to prevent duplication. Approval was given to a proposal that a book covering recognized safe practices for the industry be prepared. President Punderford will be asked to appoint a committee to work with representatives of the other associations in the selection of material. Four committees reported progress. Their completed programs must be in the hands of the secretary before July 1. The committee recommended that in printing discussions of committee reports and papers at the annual convention they be briefed with the idea of saving space in the proceedings. It was also agreed to continue the practice of distributing in advance printed copies of reports to be read at the annual convention.

Relief of Traffic Congestion

The committee on relief of traffic congestion of the Transportation & Traffic Association met at St. Louis March 3 with the following present: Paul E. Wilson, chairman; D. L. Fennell, George B. Anderson, W. E. Thompson, W. H. Maltbie, H. O. Butler and J. V. Sullivan, sponsor. The traffic situation in various cities was discussed at length and all felt that this was one of the most pressing problems for practically all companies. A form of inquiry was decided upon, this to be sent out at once so that replies could be tabulated in the near future with the idea of then agreeing on recommendations. The committee was aided in its appreciation of the problem by the discussion at the session of the Midyear conference the following morning.

City and Interurban Operation

The committees on city operation and interurban operation met jointly as the guests of Harry Reid, president Interstate Public Service Company, on March 1. The meeting was held on one of the company's new dining-club cars, which was operated out of Indianapolis, luncheon being served en route. The car was then run onto a siding near Franklin, Ind., during the meeting, afterward returning to Indianapolis.

Those attending the meeting were, for the interurban committee, Harry Reid, chairman; V. W. Berry, John Bleecker, Samuel Riddle, G. W. Welsh, H. A. Mullett, C. E. Thompson, J. C. Schade and Frank Blanchard; for the city committee, R. F. Carbutt, acting chairman; R. W. Emerson, F. C. Chambers, C. D. Porter, W. E. Wood, E. J. McIlraith and R. N. Graham representing C. S. McCalla; joint members, W. V. Hill, E. F. Wickwire and G. C. Hecker, secretary; guests, Charles L. Henry, J. P. Stewart, M. B. Lambert, James W. Welsh, Morris Buck, Bert Weedon and L. M. Brown.

Chairman Flowers of the city operation committee was unable to be present, and at his suggestion Chairman Reid presided over the joint meeting. Mr. Flowers also had designated Mr. Carbutt acting chairman of the city committee. Announcement was made of the addition of D. W. Snyder, Jr., to the interurban committee as a member-at-large.

A new assignment by President Budd was announced, to review each year the developments and improvements in equipment that the studies have indicated would be helpful to the industry.

Replies were received from several Canadian companies indicating a desire to co-operate in the work of these committees. Mr. Lambert suggested that three members-at-large for Canada be added to each committee to recognize the Canadian members of the association for the balance of this year, and to formulate a plan for properly including the Canadian territory next year. The suggestion was approved. A letter was read from the Honolulu Rapid Transit & Land Company also agreeing to co-operate. This territory was added to Mr. Hill's assignment.

It was the sense of the meeting that wide publicity should be given the work of the committees, and that arrangements be made to publish reports prior to the annual convention.

Progress reports were made by the regional vice-chairman of the committees of visits to properties in their respective territories. A number of them already have made such visits and have found practices worthy of note, covering a wide range of subjects. Personal visits were felt to be necessary to secure the desired results. It was found that there is considerable lack of knowledge on the part of operating men of the information available at association headquarters and in the technical press.

Mr. Carbutt reported that he has found it of advantage to prepare what he terms an operating handbook, containing an outline of the committee work and the general subjects to be considered. He has the intention of sending to a property in advance of his visit a sufficient number of copies, so that each operating official may have one. These men will be requested to prepare one-page statements of any developments considered of outstanding interest or value to the industry. This will save a great deal of time, and he will then be in a position to determine what further detailed studies may be necessary on any property. Mr. Carbutt stated that he had had a conference with the editors of ELECTRIC RAILWAY JOURNAL and that he had prepared a classification based on the subject index published semi-annually in this paper.

Some question was raised as to the scope of the committees. It was felt that no encroachment should be made on the work of other committees, but that the principal value of this investigation consisted in finding practices of outstanding merit and broadcasting them to the industry.

Mr. Henry stated that he was pleased with the work of the committees thus far. He felt that the main thing now is to prepare a means for co-ordinating and disseminating the information developed. Assurance of the assistance of ELECTRIC RAILWAY JOURNAL in this was given by Mr. Buck, who said this paper would be glad to publish any suitable material and to prepare for publication more detailed information on particularly interesting features.

The Improving Financial Condition of the Electric Railway Industry

This Subject, Which Was the Topic of the Afternoon Session of the St. Louis Meeting, Was Discussed from the Viewpoints of the Investment Banker, the Economist and the Holding Company

THE afternoon session took the form of a symposium, the topic being the improved financial condition of electric railways. J. K. Newman, from the standpoint of the investment banker, urged greater publicity to tell the public what has been accomplished in the way of progress and to dispel many false notions that have been accepted by the public. Prof. Richard T. Ely, one of the most noted economists in this country, pointed out the large ratio of investment to revenue, and the difficulty of reducing costs. He felt, however, that there is a decided change in the attitude of the public and of the industry, and that if the industry keeps on with its program of modernization it will come out all right. The holding company's position was outlined by B. C. Cobb, who showed how the securities of the railways have fallen from the favor of the public, and how they are even now establishing a better credit basis. All of the speakers expressed faith in the future, feeling that the industry is fast approaching a period of continued prosperity.

Investment Banker Sees Prospect of Better Financing*

By J. K. NEWMAN
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THERE are cycles of activity for securities of various classes. When the cycle of activity is strong for a special class of securities, a buying fever may spread like an epidemic and likewise run its course. If the investing public is not interested, it is difficult to dispose of any securities.

When we think about the present inability of street railways to dispose of their securities, it would seem that the principle of cycles of activity and the principle that the price of commodities averages a reasonable profit over a period of years are in danger of being disproved. For years, there has been practically no offering of exclusively street railway securities by investment bankers. Looking back into the palmy days of street railway financing, it will be recalled that good street railway securities were absorbed freely and the cycle of activity lasted for years. The question is, when will the cycle return? The public is not concerned whether street railway securities can be sold or not, though it is dependent on such sales for efficient service. It must be made to understand this and also many of the street railway conditions, good and bad, before confidence in such securities can be restored.

The present state of mind of investment bankers and private investors shows many false notions against street railways. These are based on fear, with more than a sprinkling of ignorance, and with some absence of vision. It will be helpful to enumerate these indictments, as follows:

1. Franchises with low fixed fares are known to be unprofitable.
2. Service-at-cost or other form of eliminating a fixed fare is considered only a temporary expedient.
3. Resistance to increased fare is a popular issue for political exploitation.
4. The menace of jitney competition still lingers in the minds of investors.
5. Bus systems are feared as a substitute for street railway systems.
6. The growth of private automobiles is believed to be reducing car riding.
7. Numerous receiverships and reorganizations have made investors skeptical regarding street railway securities.
8. Inability of street railways to sell additional securities or refund maturities has produced a lack of confidence in existing securities.

> GREATER PUBLICITY is urged as a means of telling the public of the improved status of electric railways as investments. The public has several false notions detrimental to the industry that should be removed. No better evidence of improving conditions can be given than advanced prices for securities already issued, and better terms on which new issues have been floated.

In the early days, investment bankers would not entertain the purchase of street railway securities unless the franchise contained a fixed fare, usually 5 cents. The fare provision, however, was the one condition above all others which caused the serious setback to street railway securities. The cost of operation soared and the 5-cent fare became unprofitable; and yet the public clung to it with a fury that equaled the determination to win the war.

Although bankers were keen to buy railway securities and the companies enjoyed what they supposed were satisfactory profits, the 5-cent fare was never really profitable, taking the business as a whole. The street railways were then placed in a position somewhat similar to that of a manufacturer who had sold his output for a period of years at a fixed price and who found that his business was being ruined by it. The manufacturer had to submit to his loss, and often bankruptcy resulted.

Unlike the manufacturer, the street railways could not go out of business without injuring every other kind of business within the territory served. Yet they were compelled to have profits which would permit the property to serve the public efficiently and permit the raising of new capital for expansion. There was only one solution, which came through the wisdom of state governments in creating public utility commissions, which adopted the practice of first determining a fair valuation or rate base. With the value or rate base determined, the regulatory bodies have allowed a fair return, which varies, though it is never too high. In some instances, and properly so, the rate of return went up as the fares went down, or an incentive in some form for good operation was granted. While those decisions by the commissions forced the street railway to live on a restricted diet, nevertheless this policy gave a stability which should be and will be the foundation of a cycle of activity for the securities of street railways.

If the public is to become interested in utility securities, it is necessary that there should be greater publicity by the street railway companies to ex-

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plain these economic changes and the stability produced by a fair return on a fair valuation. The public must know that this adjustment is a permanent one, and supersedes the fixed fare.

The effective impression made by demagogs who still believe they can get political support by clamoring for a 5-cent fare is a serious handicap. These demagogs, with few exceptions, know that a 5-cent fare is no longer possible, but they hope to fool the public for their own ends. Publicity should persist on the part of the railway until the public learns that it is getting the fairest deal in America from street railways generally.

The efficiency and the practical use of jitneys have been largely exploded. It is gratifying that in many cities the people have voted against jitneys and eliminated them. However, it will take some time yet for investors to forget the menace of jitneys and to realize that jitney competition is unfair and has about reached its end.

Some investment bankers and public investors fear that bus systems will supplant street railways. This is possible only if the cities enjoying street railway systems are willing to cause one of the greatest financial disasters this country has ever experienced. Think what it will mean if the six billion dollar investment in street railways is to be destroyed, for there would be little salvage from the property. Aside from this investment loss, what would be the financial effect on the cities if street railways were discarded? Street railways pay taxes varying from 5 to 10 per cent of their gross receipts, and in addition, for a vast amount of paving. Many cities would face serious financial problems or disaster if they could not collect these taxes and besides had to pay for and maintain the paving now paid for and maintained by the street railways. Furthermore, the public would have to pay fares considerably in excess of the present charges, because buses cannot operate so cheaply as a system of street railways. If the proper explanation of the competing bus system with its higher fare and low taxes and no paving obligations is fully explained to the public, these competing systems will not be permitted.

The bus manufacturers realize that their best customers are the street railway companies. These manufacturers do not desire to put in competing systems or to help others do so, but they have buses to sell and they look to the street railways to be the buyers.

The private automobile has undoubtedly affected street car receipts. However, the large increase in privately owned cars has not been without its advantages to street railway systems. The number of passengers carried by street cars for the last ten years clearly indicates there has been a large and steady increase, but for the last two or three years, this upward trend has flattened considerably, though it is still climbing. The private automobile, to some extent at least, helped the street railway companies to avoid expansion for which money could not be obtained and from which there would have been no profit over the cost if obtained.

Street paving required of street railways already has been mentioned. Under present conditions, private automobiles are dependent upon this paving and they should pay for it to some considerable extent. They can do so through taxes.

The public is beginning to realize that the private automobile should not be permitted to interfere with street car traffic. Regulation is growing stricter and more efficient from day to day.

Receiverships and reorganizations have made investors skeptical, but it is not generally appreciated how helpful is the law of receiverships. Street railway companies during the war were in many instances handicapped with two forms of contract impossible of performance. The one was the fixed fare, the other the contract with security holders where the capitalization was not predicated upon the basis of restricted net earnings. Receiverships were naturally forced upon the companies by these conditions, and with the property in the hands of the courts increased fares were granted to offset increased costs.

These receiverships also enabled the companies to change their financial setup. Reorganizations followed, bonded debts were adjusted to a sound basis and stock capitalizations were rearranged to make securities safe and dependable. Receiverships are terminating rapidly and the companies are going back into normal operation greatly improved from the experience.

Publicity is all-essential. This publicity, primarily, must be conducted locally and must be comprehensive in its educational scope. Street railway companies have resorted to publicity, but not sufficiently so. However, this local publicity must be handled carefully. It is not only necessary that it should be absolutely honest; it must be tactful and intelligent. Unfortunately, there are not many trained publicity experts in this business such as are found in the department stores.

As publicity grows and its results are observed, it will expand of its own momentum. Naturally, there are degrees of publicity required according to times and conditions. Until the public knows the real story of the street railways, a super-effort is necessary.

Therefore, reach out for a larger fund to supplement local publicity and for a national program. The result then will be quicker, and in two or three years homeopathic doses will answer; a major operation is required now.

Street railway financing is on the way and the outlook is hopeful. With few exceptions commissions have given final valuations and have allowed fares which will insure a sustaining return. Jitneys are fast becoming a thing of the past. Bus systems can be made an asset instead of a menace. Private automobiles will be regulated and taxed and thus be a medium of getting relief for the street railways from the paving burden. Receiverships have made it possible to eliminate impossible fare conditions. Reorganizations will result in the issuance of better bonds and the elimination of over-capitalization. Lastly, and best of all, two large issues of street railways bonds have been successfully floated by investment bankers within the last two months. Investment bankers are like sheep, though never sheepish; they follow the leader. No better evidence of the improved conditions of street railway investments exists than the advanced prices for bonds and stocks already marketed.

*Economist Sees New Era Ahead for Electric Railways**

By RICHARD T. ELY

Director of the Institute for Research in Land Economics and Public Utilities, and Professor of Economics in the University of Wisconsin

IT CANNOT be overemphasized that the point of view of an economist is the public or social point of view. His objective is promoting the general welfare. Since my subject is the financial condition of electric railways I therefore necessarily consider that condition in its relation to the financial and industrial structure of the whole country, for unsound financial conditions in one or more basic industries may disturb our entire prosperity as a people. Does not agriculture today afford ample proof as well as illustration?

First of all, what do we mean by the financial condition of any business? The financial condition of any business or of an industry is a result of the relation of expenses to income in that business or industry for some extended period of time. The net income is thus the dominant single fact behind which are assembled all the causes that affect favorably or unfavorably any enterprise.

Some Consequences of Bad Financial Conditions

When net revenues decline so that they barely cover interest and taxes no capital is available from the industry itself. Moreover, its power to draw funds from the outside at reasonable rates of interest disappears. As the margin of revenues over expenses becomes even smaller, less and less is set aside for depreciation, because that constitutes one of the expense elements that can be deferred. There soon appear inevitable concomitants of such financial conditions. Service deteriorates and the public begins to grumble. Necessary improvements are not made, so that the property begins to look run down at the heel. Capital for extensions it not available, and hence the property fails to keep pace with

*Abstract of paper presented at the Mid-year Meeting of the American Electric Railway Association, St. Louis, March 4, 1924.

the needs of the community. In this way inadequate financial resources make it impossible for an industry to supply the services for which the social economy has intended it. Other industries dependent upon its buying power suffer and languish proportionately. In truth, economically as well as morally speaking, we are all members one of another. This is the principle of social solidarity, one of the profoundest and most pregnant of all social principles and one which has daily increasing significance as economic evolution proceeds. Yet the crux of the whole matter for our present discussion lies in the relation of expenses to income. The situation can be relieved only by increasing the income or reducing expenses or both.

Present Condition Resultant of Complex Historical Causes

The existing financial condition of the electric railway industry has been the result of a long development. The causes are not all to be found in the war period, but must be traced in the history of the industry and in the history of regulation. Historical analysis must be made of the difficulties in order to disclose where, when and how remedies can be intelligently applied. Unfortunately, the electric railway is first of all a local public utility and hence has its economic roots in local soil. This gives the problem great variety and complexity. It has certain general aspects, it is true, especially as the area of operation expands, but real understanding can only flow by taking into account primarily local conditions and variations.

But the financial condition of electric railways is improving. While we cannot say that the dark clouds all belong to the past and sunshine only is promised for the future, I do believe it safe to say that the period of the greatest difficulty appears to have been passed. As Mr. Budd has indicated, the progress is reflected by increased riding on both urban and interurban lines and by great gains on interurban freight business. Yet the lessons will have been in vain unless the experiences gained are consolidated. One result should be a quickened interest in and response to proposals for the scientific study of public utility problems, for the active encouragement of both the collection of facts and their wide dissemination through scientific agencies. After all, public education and self-enlightenment are the best insurance policies against social calamities.

Certainly prior to the summer of 1919 agriculture and transportation were receiving relatively little consideration, and they were the subject of very little public concern. Yet these are the two industries that have suffered most from the war and post-war conditions and have constituted the greatest menace to the financial stability and prosperity of the whole country. Curiously enough, the prime cause of the financial difficulty in the two industries has been of an opposite character: In the case of agriculture we have an industry of extreme individualism, in which competition controls and individual productive effort is unregulated and undirected. In the case of the transportation industry, and more particularly in the case of the electric railways, we have an industry which has been subject to extremely rigid and sometimes unwise regulation. So far as popular clamor of that sort is concerned, generated by ignorance on the one hand and demagoguery on the other, it is hard to say which has been the more fruitful field, but I think that electric railways will have to yield to agriculture in this respect.

HIGH FIXED CAPITAL and large proportion of labor expense are distinguishing features of railway operation. Sound franchises and sufficient revenue must be provided if the industry is to grow and prosper. The author holds that the present new era in economic evolution necessitates a complete overhauling of our ideas of taxation.

If we were to analyze the conditions that, more than any others, determine the relation of income to expenses, we should want to present them under these headings:

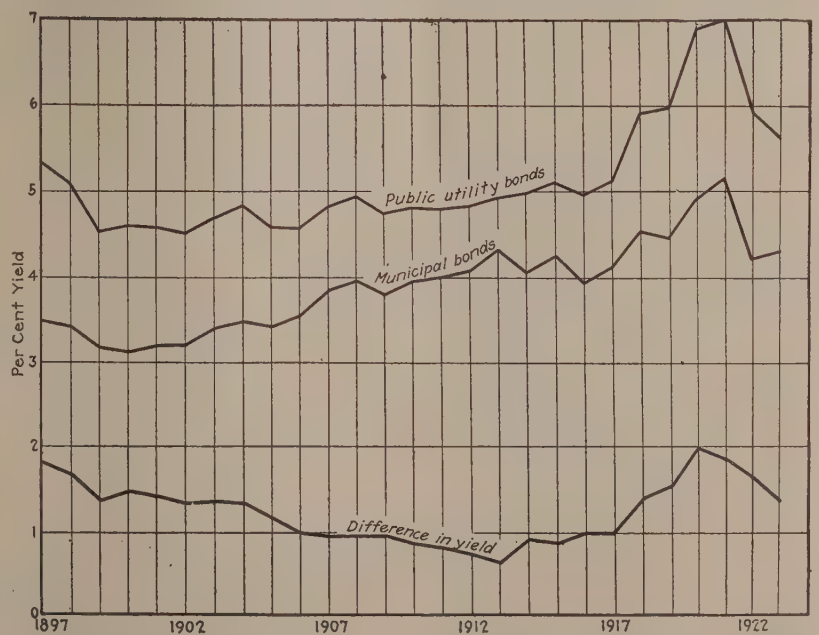
1. *Economic Conditions Inherent in the Nature of the Industry.*—Here and now I want to call attention to the relatively large investment of fixed capital, carrying along with it a very large and relatively fixed overhead. Operating expenses are the chief item here. As they are relatively constant, a situation arises in which net income varies sharply with the ebb and flow of traffic. This makes the industry peculiarly susceptible to changes in business conditions and to the inroads of competition.

In the case of growing prosperous companies, points are reached in their development when additional capital expenditures become necessary in order to provide additional plant capacity. These are always periods of economic storm and stress.

Another inherent characteristic to which attention would have to be directed is the large proportion of the wage element in the annual expense account, and the inherent inability of the industry to economize in this type of expenditure by substituting for it a capital charge. Wages constitute in the neighborhood of 46 per cent of all electric railway operating expenses. This was shown to be a peculiarly vulnerable point during the recent period of rapid and substantial wage increases. Incidentally it may be observed that electric light and power companies are in a far better position to reduce labor cost by capital expenditure and so are steam railways.

A table prepared from census figures gives some indication of the changing magnitude of supply of electric railway facilities as shown in miles of single track operated, the changing magnitude of traffic flow as indicated by revenue passengers and the degree of economic utilization as shown by passengers per mile of single track. The statistics are characteristic of industries where the supply of facilities has outrun existing or potential demand. The practical cessation of expansion since 1912 is gradually bringing about a situation of equilibrium.

The development of the private automobile has undoubtedly been the reason why potential demand as shown by population growth failed to materialize. The situation promises to



Comparative Average Yield and Difference in Yield Between Twenty-five Public Utility Bonds and Fifteen Municipal Bonds, Average of Four Months—January, April, July and October, Annually, 1897-1927

CHANGING MAGNITUDE OF ELECTRIC RAILWAY OPERATIONS
U. S. Census Returns

Year	Miles Single Track	Revenue Passengers	Revenue Passengers per Mile Single Track
1890	8,123	2,023,010,202	249,047
1902	22,577	4,774,211,904	212,217
1907	34,375	7,441,114,508	216,522
1912	41,033	9,545,554,667	232,556
1917	44,808	11,304,660,462	252,323
1922	43,905	12,665,300,050	288,471

stabilize itself by making the electric railway in urban centers an agency for mass transportation, with the motor bus giving supplemental service.

There is no basis for the suggestion that one often hears that the electric railway is a "dying industry." While motor bus traffic will increase, the comparative costs and convenience of the two types of conveyance are not such as to justify the prediction that the one will supersede the other.

2. *Management of the Individual Business Unit.*— Under this heading would have to be put the sum total of the devices and policies the management adopts in order to make a given expenditure bring the maximum of return in service units. The stress of circumstances has certainly furnished an incentive to all manner of economies. Criticism from within and without the industry, combined with a final break-up in the cake of custom that was threatening to encrust the industry, has brought on a new spirit among those manning these enterprises.

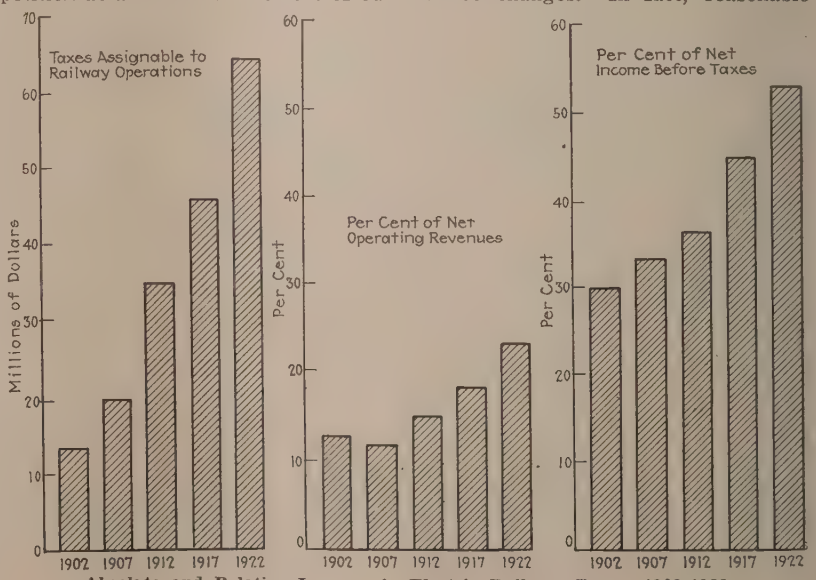
3. *Legal Requirements that Condition Income and Outgo.*—You have all been painfully aware of the fact that the industry in which you are associated is one in which prices are controlled by public authority. This has deprived you of a desirable flexibility in adjusting your price schedules to what you might otherwise have regarded as good business. You have been fortunate if you were able to bring your case to the attention of a regulating authority with the power to make necessary adjustments. In many cases you may have been face to face with inflexible rate provisions in franchise contracts entered into at a time before the recent price revolution. Other difficulties of the same general origin may have arisen because of the uncertain tenure of your franchises. The requirements of a public policy, deemed wise in the past, may have placed upon your properties the burdens of special taxes and special imposts. These legal requirements should not, in an enlightened community, be anything more than the sane premises in which the public interest in adequate service at reasonable rates finds its reconciliation with the private interest in an economic livelihood for each of the co-operating producers, as well as their joint interest in the financial health of the entire going concern. As in the case of policies of management, there is large scope here for the possibilities of working improvements in public policies of control.

4. *Conjunctural Elements Conditioning Income and Outgo.*—In economic life what we call conjuncture plays a large rôle, but it has not as yet received the scientific treatment that it deserves. Under conjuncture we understand what we may loosely designate as luck and chance. While we deal here with a group of causes over which we have little control, we may be able to soften down the effect of these causes and provide for flexible accommodation to them, thus escaping their baneful influence. The war emergency was such a conjunctural element, foreseen by no one, yet vitally affecting all. All economic activity was borne upon a crest of advancing prices which did not definitely subside until the spring of 1920, and then with disastrous effects. Minor disturbances, such as the influenza epidemic of 1918, may come in to add their share to your troubles. And in the specter of business depression and consequent unemployment you meet an old enemy whose coming is none the less uncertain, though you have met him often. Last, but not least, is the gradual conjunctural change which has been quietly shifting the entire basis of your business, namely, the perfection of automotive equipment, so that there stands at your elbow all of the time the possibility of competition from substitute service. This is a form of competition against which no certificate of convenience and necessity can or should afford protection. It is one of the risks inherent in all enterprise. Yet proper public policy and flexible management policies can do much to help even here.

Outstanding Remedies

Among the remedial conditions which past experience has suggested, two stand out above a host of others. The first concerns the conditions under which the utility is operated. If the mistakes of the past have made clear one thing, they have shown that competition among like or substitute agencies of transportation must be eliminated. We have as a people become so accustomed to look upon competition as an automatic solvent of our economic problems that we cannot readily accept the thought that monopoly operates as a beneficent principle of organization, making possible on the one hand the conservation and marshaling of productive capacity and on the other hand the governmental limitation of profits to a reasonable amount. In fact, instead of less monopoly we should introduce more monopoly, even to the point where we get complete integration of the supply of local transportation, by whatever agency performed. Strict and detailed regulation must accompany such monopolistic grants. Wherever possible the grants should be, like the character of the function performed, indefinite in duration, with public ownership and operation as a permanent possibility under conditions protecting vested property rights. The operating agreement contemplated between the city of Milwaukee and Milwaukee Electric Railway & Light Company is one that strikes out along these lines, and is worthy of close study by members of this association.

The second remedial condition relates to the instrumentalities by which prices are adjusted. There can be no flexible accommodation to causes over which management has no control, unless there is adopted the principle of what we economists call the necessary supply price. This means that we must so adjust rates and charges as to produce in a free community the service desired. Enough must be paid to purchase labor, skill, talent and capital for the type of service demanded. If extensions are desired, revenues must be sufficient to secure needed capital and other requisites in the open market. We cannot get something for nothing. Even where the adjustment of rates is avowedly based upon the necessary cost of the service, as in certain service-at-cost contracts, there must be an unflinching application of the principle as was done in Boston, and was not done in Cincinnati, in order to bring the individual plant into an economic position where it may fulfill its social function. Prices must change as the reasonable cost of rendering adequate service changes. In fact, reasonable


Taxes Assignable to Railway Operations
Millions of Dollars
Per Cent of Net Operating Revenues
Per Cent
Per Cent of Net Income Before Taxes
Per Cent
1902 1907 1912 1917 1922

Absolute and Relative Increase in Electric Railway Taxes, 1902-1922

cost under monopoly, where the service rendered is a necessity, is the only basis left for price adjustment. This result can best be obtained under flexible rate franchises or else by the method of continuous regulation by commissions.

With these remedial conditions in effect, any urban electric railway will have gone a long way to bring about that reasonable balance between income and outgo which alone can establish sound financial conditions. That there is promise of a return to good financial conditions is shown by the credit standing of public utilities in general, as well as of electric railways in particular.

Studies of the Institute for Research in Land Economics and Public Utilities in the credit of electric railways show that the price of electric railway bonds increased more proportionately from 1922 to 1923 than those of any other class of utility. This is shown in the accompanying chart.

The weighted average yield, based on offering price, of substantially all security issues by electric railways, exclusively, was 6.40 per cent for 1922. In 1920 the average weighted rate was 7.92 per cent for exclusively electric railway companies. Railway and electric company securities issued in 1920 were offered at a weighted average yield of 7.82 per cent. In 1922 the comparable figure was found to be 5.91 per cent.

Compared with the rate at which the largest cities can borrow, the credit of public utilities also has improved. In 1920 there was an average difference of about 2 per cent in yield, in 1923 the same bonds yielded less than 1.5 per cent more than the bonds (tax exempt) of our larger cities.

Within the recent past, two clouds have appeared upon the financial horizon of electric railways. The first concerns the very rapid and heavy increase in the burden of taxation, and the second is centered in the high cost of financing experienced by electric railways in the recent past with the prospect that future refunding operations will likewise increase the interest burden. While neither of these is by any means the largest element in the financial budgets of electric railways, the large public interest connected with them and their exposed position has made them the subject of a good deal of public comment. For these reasons the Institute for Research in Land Economics and Public Utilities has made them the subject of special research. While we have not as yet completed our work, certain facts are already beginning to stand out.

First, as to taxation, the accompanying chart and table based on census data show absolute and relative increase in electric railway taxes in the years 1902-22.

Comprehensive studies have been made of the burden of taxes upon electric railways in two states, New York and Wisconsin. The New York figures show the following:

RATIO TAX ACCRUALS TO NET INCOME (BEFORE DEDUCTION OF TAXES) FOR ELECTRIC RAILWAYS IN NEW YORK STATE*

	Per Cent		Per Cent
1912	31.11	1915	38.56
1913	35.55	1916	37.05
1914	36.64	1917	49.43

* Report of special joint committee on taxation and retrenchment, March, 1922, page 307.

The ratio of aggregate state and local taxes on electric railways in New York state to aggregate net income before deduction of taxes for the ten-year period 1911-20 was 56.5 per cent, as given in the report of the special joint committee on taxation and retrenchment.

The following table* shows per cent of income receipts from all sources devoted to taxes and dividends:

COMPARISON OF TAXES AND DIVIDENDS—PER CENT OF INCOME OR RECEIPTS FROM ALL SOURCES DEVOTED TO TAXES AND DIVIDENDS

	1907	1912	1917	1922
Taxes	4.6	6.0	6.3	Not available
Dividends	6.2	8.8	6.6	Not available

That is, stockholders very nearly shared half and half with the government.

But it must be clear that no conclusion can be drawn from the mere increase in taxes or even the relative increase of that as compared with other items. In the end the problem is one of equitably and scientifically distributing the burdens of government. Our constitutions generally require equalization, and our administrative commissions are making progress in this direction. But tax methods have been so variegated that it is difficult to get at the quantitative effect of the different plans. We are making such a quantitative study in Wisconsin and are getting some results which we already expected and some which we were not prepared for.

It is clear that if we wish the financial condition of electric street railways to continue to improve we cannot afford to neglect to consider the whole question of taxation, which has become so enormous a load that it is a crushing burden, unless every one bears his share. This is so large a subject that I can offer only a few suggestions. Let me state a general conclusion:

The present is a new era in economic evolution requiring an entire overhauling of our ideas of taxation and a new program with respect to the expenses and revenues of government. The magnitude of public expenditures in itself suggests that old methods are inadequate. When the expenditures of government were small and taxes were an almost negligible burden to the taxpayer rough-and-ready methods of raising revenue, while not satisfactory, did not involve intolerable burdens.

There was a time in American history, and that so recent as the latter part of the nineteenth century, when the disposition of surplus revenue constituted an outstanding problem of federal finance.

Instead we are now living in a period of heavy taxes and greatest public expenditures. Let me give the facts as succinctly as possible.

1. It has been estimated that as high as one-seventh of our income is paid out as taxes directly or indirectly[1].

2. Total per capita taxes have risen from around $23 in 1912-13 to about $80 in 1920-21[2].

3. The total ordinary receipts of the federal government have increased from about $700,000,000 in the years immediately before the war to over $5,500,000,000 in 1921.

4. Receipts of state governments have increased from a $300,000,000 level before the war to over a $500,000,000 in 1919 and probably to much higher figures in 1923[3].

An increased proportion of these tremendous'y increased revenues has been raised by direct taxation.

Statistics compiled by the Institute for Research in Land Economics and Public Utilities show that in 1910 only 3 per cent of our federal revenues was secured from the levy of direct taxes, whereas in 1920 approximately 60 per cent was secured by direct taxation.

Government Expenditures Increasing

The oldest man in this audience cannot think back to a time when he did not hear regularly in political campaigns the slogan, retrenchment and reform. Long before I was born candidates of political parties in state and nation regularly began to promise reduced public expenditures to be followed by reduced taxation, and without interruption the public expenditures have increased.

The true underlying cause of increased and increasing public expenditures is found in the development of state and nation as co-operative institutions for promoting the general welfare. More and more our wants are satisfied through public agencies, and to an ever-increasing extent there is a growing regard for the needs of the great masses of the people. The ordinary man, woman and child receive ever-increasing benefits from public agencies. Let us express this truth in these words: *The service idea of government is gaining ground day by day. It is coming to dominate all other ideas. It finds expression in public expenditures.*

*Taken from the Census Report, Electrical Industries 1917, page 64.

ABSOLUTE AND RELATIVE INCREASE IN ELECTRIC RAILWAY TAXES 1902-1922*

Year	Taxes Assignable to Railway Operations	Per Cent Increase	Per Cent of All Expenses	Per Cent of Net Operating Revenues	Per Cent of Net Income Before Taxes
1902	$13,078,899	...	5.95	12.4	30.0
1907	19,755,602	51.1	5.07	11.8	32.9
1912	35,027,965	77.3	6.68	14.9	36.1
1917	45,756,695	30.6	6.79	17.8	44.8
1922	64,788,315	41.6	6.53	22.4	53.2

* Compiled from reports of the Bureau of Census on Electric Railways.

[1]National Industrial Conference Board Report No. 55.
[2]Ibid. ($88.37 in 1922 Census Bureau, as stated in Chicago *Tribune*, Jan. 20, 1924.)
[3]In 1922 receipts of state governments were $867,468,000, an increase of 183 per cent over 1912—Census Bureau as reported in Chicago *Tribune* of Jan. 21, 1924.

This great and ever increasing load of public expenditures requires an entire overhauling of our ideas of taxation. The burden is crushing, unless everybody puts his shoulder under the load and helps to carry it. The tendency in recent years, however, has been to concentrate the burden upon a portion of the community through direct property taxes and income taxes. Census figures show that in the case of the federal government the percentage of ordinary receipts from income and excess profit taxes increased from 3.10 in 1910 to 57.92 in 1921.

We have come to a time when, in the interest of the people, further progress must be met by indirect taxation, supplementing the direct taxes. It remains to work out in detail a system of taxation in which direct and indirect taxes will find their proper place, and in which the service idea of government will find its support in universal contributions to the burdens involved in the extension of the service that the government can render.

In a system of indirect taxes will be included certain sales taxes like the one on gasoline, which is as just and fair a tax as was ever devised. Amusements will be taxed; expenditures for tobacco and other superfluities will include contributions to the public purse —small in each instance, but aggregating large amounts. These taxes paid day by day in small sums will be an easy burden to bear. They will enter into the general expenses of living, and adjustments will be so made that no one will carry a too onerous burden. There will be no discontent, unless it is artificially aroused.

How Electric Railways Can Get Relief

In conclusion, just a few words more about remedies. Electric railways must be relieved from the competition of tax-exempt capital, and relieved further from the competition of other agencies of transportation publicly "subsidized" and not bearing comparable taxes, and, third, must be freed from competition of unregulated agencies of transportation. The one measure will make the future of electric railways more secure and certain, the second will result in a more equitable distribution of the tax burden and the third will make it possible for this industry to obtain capital at more reasonable rates.

But most fundamental of all is education for good will and knowledge, both within and without the electric railways. Those in the industry deserve praise for the masterly way many of the leaders are attacking these problems. They must continue what they have begun. Most difficult is their task, handling as they do the actual physical bodies of their patrons, often under most trying circumstances. They must be more than just and fair. They must put themselves always in the other fellow's place and must have, as an ideal of courtesy and consideration, the best manners of the best department store, engaged in fierce competition. It is the little things that count—manners more than money in getting rid of old ill will and building up new good will.

*Holding Companies See Progress in the Industry**

By B. C. COBB
Vice-President Hodenpyl, Hardy & Company, Inc., New York

YOU probably have already heard or have read that the electric railways bought more new equipment in 1923 than in any year since 1913; that approximately $282,000,000 was expended last year in the purchase of materials for maintenance, extensions and improvements. Of this amount about 64 per cent was used for new equipment, extensions and improvements. You have also probably heard that the estimates for expenditures of similar character in 1924 amount to approximately $262,000,000. The expenditures thus made and proposed are one reflection of the improvement that has been going on in the business in which we and the public are so vitally interested.

The 1923 annual reports of all companies are not available at this time, but preliminary figures indicate that the electric railway industry in 1923 practically succeeded in holding the gain in net earnings made in 1922—the best year it has had since 1916. Preliminary figures also indicate that nearly 16,000,000,000 passengers were carried, thereby smashing the previous high record of 15,337,000,000 made in 1922.

I suppose there are some who think net earnings in 1923 should have shown a gain over 1922 because of the increase in the number of passengers carried. While this would have been nice, and we all would have been pleased, still I am not in accord with the thought, nor chagrined that we did not come through, and I will tell you why.

At the beginning of 1923 there were prospects of another period of inflation. The trend of commodity prices was upward, feverish speculation in general building operations was going on, and demands for higher wages were being made on all sides. For a time it looked as if the old vicious cycle of advancing prices and advancing wages would soon again be in full swing. Fortunately this movement was partially checked before it got far out of bounds. Nevertheless, many electric railway companies found it necessary to make wage advances and in many ways increase their other expenses. Obviously these increases had an unfavorable effect upon operating costs and ate into the net earnings which might otherwise have been expected. Despite these additional handicaps the net earnings of the industry as a whole, as previously stated, were practically equal to the earnings shown in 1922. I consider this an accomplishment of which we may well be proud.

Another thing—and it is important enough to repeat—the electric railways not only carried more passengers in 1923 than in 1922 but they carried more passengers in 1923 than in any year since the industry was born.

It is significant that this record was made in the year that automobile production reached its highest point. It is doubly significant, for the 1923 record of the electric railways proves conclusively the economic need of the service rendered—the cheapest and most dependable form of public transportation that has yet been devised.

"High-sounding words," some of you may say, "but the amount of net earnings left after all charges are made is what interests us." Quite right, it interests me too, and I have spent many hard days and some sleepless nights in contemplating ways and means for increasing net earnings to a point where they would show a fair return on the value of the property used in serving the public. That is our goal, and we are going to reach it notwithstanding that at times it seems as illusionary and as far off as the mythical pot of gold.

When my mind goes back ten years and I picture the situation at that time, I recall that electric railways were in high favor with the public and their securities were in demand by investors. Why? Because the electric railways then had what was considered the exclusive right to carry on an indispensable form of public service, the charge for which was fixed for a long period of time. This was considered an advantage, for while operating costs might rise slightly, it was thought the growth of population would increase traffic to such an extent as to offset any serious inroads upon net earnings. Again, fixing the rate for a long-time period was supposed to protect the companies. It forestalled political interference and prevented enthusiastic rate regulators from making trouble. The situation was simplicity itself, and the operators as well as the investors felt little concern about the future.

THE ELECTRIC RAILWAYS are buying more materials for maintenance, extensions and improvements than in recent years. Preliminary figures indicate that more passengers were carried in 1923 than ever before and that riders who forsook the street car for other vehicles are now coming back. Attention was called to some recent successful electric railway financing.

*Abstract of paper presented before Mid-year Meeting of the American Electric Railway Association, St. Louis, March 4, 1924.

Then came the war, inflated costs, and other difficulties. Don't shrug your shoulders—I am not going to drag you through that "chamber of horrors," but if any one had told us ten years ago what the electric railways were going to be up against I venture to say there are mighty few who would have thought the industry could survive. The fact that it has not only survived but has gone forward after all the hammering it has received shows the inherent strength of and the necessity for the business.

Every serious illness, unless death intervenes, is followed by convalescence. Then, if one's constitution is sound, comes full recovery. The more serious the illness the slower the recovery of the patient. The important consideration, however, at all times is whether progress is being made. So it is with the electric railway industry. It passed through its serious illness and recovery set in after 1918.

What one really wants to know about electric railway operation is whether the trend is in the right direction—I mean, is the trend toward increasing traffic and increasing net earnings; and if so, is this trend going to be permanent? This sounds so commonplace I suppose you think I am going solemnly to tell you next that "water is wet." From the variety of opinions I hear and read I sometimes wonder whether those people who bemoan the future of electric railways would not also try to prove that there is no moisture in water if the fact were not so self-evident.

I do not claim any gift of prophetic vision, nor do I pose as a soothsayer. Nevertheless, and notwithstanding numerous perplexing problems which are pressing for solution, I ask you in the name of common sense—is there any likelihood during the next ten years of a repetition of all the "hell" the industry has endured during the past ten years?

"Automobile," you say. All right! I grant that it has diverted a lot of passenger business and that it has financially crippled some electric railway companies, also that here and there it may do so again. It is my guess, however, that the worst effects from this form of competition have been seen.

Automobiles are going to be manufactured this year and the next and for many years to come. There seems to be no saturation point in so far as ownership of cars is concerned, but as I see it there is fast developing a saturation point of another character, viz., "road saturation point." Traffic congestion, with its ensuing delays, inconveniences, and increasing number of fatal accidents, has begun to restrict the heretofore indiscriminate use of passenger automobiles. As a result there is a growing tendency on the part of automobilists again to patronize the electric railways, especially that large class of car owners whose occupations do not make it necessary for them to use the motor car in the transaction of their daily business. It takes time for the habits of the public to change, but the fact remains, however, and it is common knowledge, that a change in the riding habit is now going on. People who formerly rode the electric railway and later on forsook it are now coming back.

The effect of this change on street car traffic is more evident in the larger cities, but the movement is spreading and is also becoming noticeable in the cities with populations of 50,000 and up.

The year 1923 was the biggest the automotive industry has ever seen. Approximately 3,650,000 passenger cars were manufactured, and there were more passenger car registrations than in any previous year. Coincidentally with this record output and registration the electric railways carried more passengers in 1923 than in any other year in the history of the industry. And all this happened without any considerable track and road extension. Here is what the record of automobile registration and passengers carried by electric railways shows since 1917:

Year	Passenger Automobile Registration	Per Cent Increase Over Previous Year	Passengers Carried by Electric Railways	Per Cent Increase Over Previous Year
1917	5,101,000	....	14,506,000,000	.....
1918	6,064,000	18.8	14,243,000,000	—1.1
1919	7,539,000	24.3	14,915,000,000	4.7
1920	9,118,000	20.9	15,540,000,000	4.2
1921	9,345,000	2.5	14,574,000,000	—6.2
1922	10,863,400	16.2	15,337,000,000	5.2
1923	12,880,000	18.5	15,989,000,000	4.2

Is it not remarkable that in this six-year period passengers carried by electric railways have continued to increase in the face of an increase in passenger automobile registration of approximately 7,780,000?

"What about motor buses replacing the electric railways?" is another popular question. The passenger traffic figures I have just cited is one answer. Buses never can handle the volume of traffic which the electric railways are moving daily. Another answer is that in those cities where the public has tried both systems it has decided in favor of the electric railway. Is there any reason to suppose the experience of the citizens of Des Moines, Toledo, Saginaw, Bridgeport, and other cities, is not representative of the public feeling elsewhere? Akron has more recently tried and reached the same answer.

We all know that the motor bus supplies a very definite need. Be that as it may, it cannot supplant the service rendered by the electric railways. Experience has demonstrated that the bus is of more value to the public in supplementing electric railway service than in superseding it. The public is principally interested in cheap, dependable transportation, and it is realizing more and more that this can be furnished best by the electric railway. It is also realizing more and more that the unregulated operation of buses has an unfavorable effect upon local transportation service. Consequently there is more of a tendency on the part of public authorities in most sections of the country to give the electric railway companies a chance.

An outstanding feature in this connection is the experience of the street railway in Des Moines, Iowa, where the public has identified itself with the company's future by purchasing preferred stock on the "customer-ownership" plan.

Congestion of city streets is another problem, and the regulation of traffic to relieve this congestion is helping the railways to speed up their car movements and incidentally pick up more passengers. Parking of cars along the curb on city streets will soon be a thing of the past. It cannot go on unless the streets are widened, and this in many instances is impossible, at least not without great expense to and burden on the taxpayer. Years ago when we had cobblestone gutters and plank sidewalks the farmer was accustomed, on his weekly trips to town, to hitch his horses to iron rings placed in the wooden sidewalks along the curb for that purpose. As the cities grew and the march of progress demanded better pavements and better sidewalks, so passed the hitching rings and the parking of farmers' wagons. Thus it will be with automobiles if we are to keep our city streets open for the free and easy movement of traffic.

Relative Values of Street Occupancy

Much has been said about the ability of automobiles and motor buses properly to handle passenger traffic. Not yet, however, have I seen any practical demonstration or figures to prove these statements. In Baltimore, as perhaps some of you know, a recent count of downtown traffic conditions showed that five times as many automobiles carried less than one-fifth as many passengers as street cars; that 4,130 parked vehicles not only took up all the available space, retarding the use of other automobiles while the owners of the parked cars were transacting business, but in addition the parked automobiles lessened the width of the street about half and practically choked up all the main arteries in and out of the city.

In Grand Rapids, Mich., a recent check of the same character during the rush hour showed that in a certain period 119 street cars and 1,130 automobiles passed a given point. In other words, 9.53 per cent of the passing traffic was composed of street cars and 90.47 per cent of automobiles. The passengers carried by the street cars numbered 3,647 and the passengers carried by the automobiles 2,094, or 63½ per cent by street cars and 36½ per cent by automobiles. The space taken up in the street by the 119 cars figured 4,760 lin.ft. and by the 1,130 automobiles 15,820 ft. The street cars occupied 23 per cent of the space, the automobiles three and one-half times as much, or 77 per cent of the space. In other words, the automobiles took up three and one-half times as much space on the street and carried only a little more than one-half as many people. Figured in another way, the automobiles took seven times as much street space per passenger as did the street cars. And yet some people say that automobiles and auto buses alone without the street cars can properly take care of the traffic in large cities.

I hold no brief against the motor bus. On the contrary, I am strong for it in its proper place and have long been an advocate of its use in conjunction with

the railway. Therefore, do not imagine that I am trying to prove with the few figures given that it has no place on city streets. I think it has, but not as a substitute for electric cars. The Grand Rapids figures are not by any means conclusive and the check included not only buses but all sorts and sizes of private automobiles. They are only given to show that the street car still occupies a prominent place in our daily life and is a necessity, not a luxury, nor a thing of the past.

If all of the 1,130 Grand Rapids automobiles had been full sized buses, they would have occupied 31,640 ft. of street space, and if fully loaded with sitters and standees they would have carried only approximately 45,000 people; whereas to carry the same number of passengers by the railway only 452 cars would have been required and only 18,080 ft. of street occupied.

The various factors mentioned are some of the reasons why the outlook for the industry seems more encouraging to me now than it has for several years. I do not mean to say that every individual company's troubles are over. Such is not the case, especially in those places where the local company has not received proper treatment in the matter of fares and relief from motor bus and jitney competition. Short-sightedness on the part of local authorities frequently is the reason for such conditions.

Outlook for Future Good

The improvement that has taken place in the industry since 1918 augurs well for the future. True, this improvement has not yet in many instances reached the point where the balance after operating expenses, taxes and a reasonable allowance for depreciation shows a fair return on the property investment. Nevertheless the net earnings trend is in the right direction, and the investing public has begun to take notice.

One year ago the average investor declined to even look at traction bonds. Now he is not only willing to look but willing to buy. His former fears about the economic usefulness of electric railway transportation are diminishing. Of course, the investor must continue to discriminate; he must pick and choose his traction bonds and securities in just the same way he picks and chooses when buying other classes of securities. This however, is not the important point I am trying to get across. What I want to get into your minds is that electric railway securities are now beginning to attract attention and many buyers, heretofore not receptive, are looking them up. Proof of this is shown by some of the electric railway financing done during the past year:

Market Street Railway of San Francisco.

United Railways & Electric Company of Baltimore.

Boston Elevated Railway.

Philadelphia Rapid Transit.

United Railways of St. Louis.

They have all been successful in selling their bonds and short-term notes on a basis of from 6.25 per cent to 7 per cent in a highly competitive market.

The success of these companies undoubtedly will encourage others to enter the market, and as the public becomes acquainted with the improved financial condition of electric railways the demand for their securities will increase. Is it logical that a railway bond issued by a road in a growing and prosperous community, one that earns more than two and one-half times its interest charges, should go begging? I say "no"; and when the investing public gets over its scare, it will not.

It may be necessary to give some companies a dose of physic. Such treatment has been administered to a few already and with good effect. I mean by this it may be necessary in some instances to make a new stack-up of the capital structure in order to save the company and its service for the people. I know whereof I speak, for frankly I have already sat in on one or two parties of this kind. Happily, the patients have lived and are now rendering good service.

I do not advocate stringent measures of this kind unless it becomes imperative to adopt them. If they are adopted it is well to keep down the bond issue; it always is a burden and sometimes a severe taskmaster. The amount of stock issued does not so much matter, for all we want and all we are entitled to is a fair return on a fair value of the property, and whether this return is divided over a larger or a smaller amount of stock makes little difference.

Right now, and to the country's detriment, the investment in tax-exempt securities amounts to more than $12,000,000,000. If Secretary Mellon's tax revision plan goes through there undoubtedly will be a large amount of capital released for investment in other classes of securities. This will be a good thing and of benefit to all.

The experienced investor who buys bonds in lots of $10,000 and over is going again to become a factor in the market. This type of buyer usually has no prejudices or sentiment about securities. Values are what interest him. He measures these values by the degree of safety and the return obtainable. Opportunities of this sort are to be found at present in bonds of those electric railway companies which during the past five years have earned their interest charges by an adequate margin. The ability to earn under the very difficult operating conditions which have prevailed is a real test of earning power, and this fact is now recognized more than at any other time in several years.

With a credit basis again established electric railway companies can more readily finance necessary extensions and improvements. This basis I think is fast becoming established. It is necessary if the companies are going to grow and prosper and properly serve the communities in which they operate. No community can grow and prosper that starves its utilities, and that is why I say in growing and prosperous communities the electric railways and other utilities will flourish and grow strong.

I have not stuck strictly to the text assigned me and I fear I have rambled far afield. But just the same it has been a privilege to be allowed to express my views on electric railways, and in conclusion I want to say that I still have faith in the future of the industry because I still have faith in the ultimate fairness of the American people and their good sense on all important matters which concern their welfare.

COMPETITION among like or substitute agencies of transportation must be eliminated. We have as a people become so accustomed to look upon competition as an automatic solvent of our economic problems that we cannot readily accept the thought that monopoly operates as a beneficent principle. . . . In fact, instead of less monopoly we should introduce more monopoly, even to the point where we get complete integration of the supply of local transportation, by whatever agency performed.—R. T. ELY.

(*See page* 312)

Association News & Discussions

Bus Operation and Accounting*

By L. J. WERTZLER
Assistant Auditor of Passenger Accounts, Chicago, North Shore & Milwaukee Railroad

A REVIEW of present conditions indicates that bus service is to be a permanent part of the transportation service given by many electric railway companies, partly as a protection to their present business and partly for the purpose of securing new business. There is no apparent agency that can operate these bus lines in a more efficient and economical manner. The organization is already established, with departments in charge of executives familiar with the problems of passenger transportation. The traffic department exists for the solicitation of business, the transportation department for the operation of the buses and station facilities, the mechanical department for the maintenance of the buses, the maintenance of way department to assist if necessary in keeping the roads open in bad weather, the general offices for the accounting and administration and the storehouse for storing of repair parts. I do not mean that the various departments can shoulder this additional expense without feeling it, but obviously it can be done much more economically and efficiently by a railway than if an entirely new organization has to be established.

The same precautions must be exercised in providing clean, comfortable riding buses in charge of competent uniformed operators as in operating railway cars. Due regard must be given to schedules and station facilities to meet the requirements of patrons. Operators should be made to understand their responsibility of observing road rules, stopping at railway crossings and giving due respect to drivers of pleasure machines.

Establishment of Rates

Some of the state commissions require the filing of tariffs covering bus operation in the same manner as railroads, some require a schedule showing territory served only and in other states the commission has no authority regarding rates or schedules. It is to the advantage of the railroads for the state commission to have authority regarding the operation of buses and the filing of tariffs. The Interstate Commerce Commission apparently has no authority over the bus operations, as it does not require the filing of rates and its authority is not required for operating buses.

The North Shore Line has established some through rates covering combination of rail and bus transportation, and these rates are considerably lower than the sum of the locals. The revenue must be apportioned, however, to give the railroad the full tariff rate for its proportion of the haul. It was necessary to make these rates in order to meet competition to a certain large and well patronized summer resort. We also find it necessary in certain instances to provide transfer facilities from railroad to bus line and vice versa.

When our bus lines were first operated the rates were on the same basis per mile as on the railroad, but we soon found that this was not sufficient to meet operating costs. The rates were then revised so that the bus rates on one way and commutation tickets are 20 per cent higher than our rail rates, with the exception of our bus line between Waukegan and Kenosha, which serves the same towns and cities as the railroad, though operating 1 mile to the east. Here, the tickets permit passengers to use either bus or rail. Our minimum adult ticket and cash fare is 10 cents and passengers who fail to purchase tickets before boarding buses are required to pay the cash fare rate, which is 10 per cent greater than the ticket rate. We have ticket offices and waiting rooms at main towns and cities. Most of these are located in stores or refreshment parlors and are paid for on a commission basis.

On lines where the bus fare is higher than the rail fare a distinctive color of ticket is used for convenience of bus operators in detecting whether the passenger has paid the correct rate and is entitled to ride on the bus.

When we started operating buses the operator lifted and canceled all tickets when passengers boarded the bus, and he had no means of detecting overriding. Now, operators cancel and return the tickets to the passengers after noting the point where the passengers boarded the bus. The operator then lifts the ticket when passenger leaves the bus, and if there has been overriding, as shown by the destination on the ticket, an additional charge is made.

For cash fare collections we issue a receipt by means of the McDonald ticket box, the receipt showing whether half fare or adult fare is charged and the points between which passenger intends to ride. This receipt is surrendered by the passenger when leaving the bus and both portions are turned in to auditor for comparison.

A trip report showing date, run number, leaving time and starting point, arriving time, destination, mileage, number of tickets and cash fares for each individual trip and operator's name, together with time on duty, is turned in daily with both portions of the cash fare receipts. The cash receipts are checked to verify the rates collected and to see that all receipts are accounted for. The total of the cash fare receipts is compared with the total shown on the trip report of the operator. The ticket collections for each trip are turned in in separate envelopes properly marked. These tickets are counted and valued, and the total valuation is entered on the face of the envelope. A "recap" is made daily of all bus lines, with earnings distributed by divisions, and the cash remitted is checked against the amount due. Cash and ticket averages and shortages are also shown on the recap, the operator being charged for all cash shortages.

Accounting Practice

An individual account is kept for each operator. The bus operator in making up his trip report simultaneously by the use of carbon paper makes up a mileage stub, which is turned in to the transportation department. The accounting department makes use of the operator's recap sheet and the transportation department's daily mileage report in compiling a daily earnings statement, which shows the number of passengers carried, mileage operated, total revenue, revenue per car-mile and revenue per passenger, as compared with same information of the corresponding day of the previous year, with weather conditions also noted. A copy of this earnings statement is sent to various department heads and officials. At the end of each month a condensed statement showing total cash remitted, cash and ticket revenue and operators' unadjusted shortages is rendered the general accounting department of the controlling ledger. The total cash is balanced daily and monthly with the amount credited to bus operator's remittances by the treasurer.

The accounting for the motor bus business is carried through practically the same procedure as for the railway. In fact, the Interstate Commerce Commission's classification of accounts for electric railways was used as a basis for making the bus account classification. Only such changes were made as were necessary to adapt it to bus operation. The bus accounts classification that we use is the same as that adopted by the American Electric Railway Accountants' Association at its 1923 convention.

The investment account of the buses is kept in the railway investment account as an auxiliary investment. All other accounts are separate from the railway accounts.

An income and expense statement is compiled in the same manner as for the railway, the gross figures being included in the general income and expense statement through the auxiliary

*Abstract of paper presented at the meeting of the Central Electric Railway Accountants' Association, Fort Wayne, Ind., Feb. 29, 1924.

accounts. The taxes of the bus operation are chargeable to railway taxes, through the provision of the Interstate Commerce Commission classification, under the heading of "auxiliary operations."

A tire reserve should be provided based on mileage operated unless the operating company has a large fleet of buses so that the renewals issued from the storekeeper keeps an average charge to expense. Other reserves, such as casualty, property damage, fire insurance and depreciation, should be provided, but the basis depends upon circumstances, which must be decided by each individual company.

We render both quarterly and annual reports of income and expense to the state commissions. These reports are practically the same in form as those rendered for railway operation.

The North Shore Line is now operating twenty-eight buses and no doubt will purchase additional equipment in the near future to meet the growing demands. Some of these are parlor buses, used for long trips and special parties. They are equipped with deep-cushioned movable chairs and compare favorably with the parlor car equipment on the railroads.

We have constant demands from lodges, societies, schools, etc., for chartered buses, for which a charge is made on a mileage basis, with an additional charge for waiting time.

Our traffic department is completing arrangements for tours covering periods from four to seven days, with rates which will include hotel accommodations and side trips, such as boat excursions at the various summer resorts, etc. Arrangements have also been made for reservations for these tours through the various tour agencies throughout the country.

It has not been my intention in preparing this paper to make it appear that the bus business is all velvet. We have new problems to solve and new conditions to meet when the motor power is gasoline instead of electricity and the right-of-way is the public highway instead of a smooth roadbed and steel rails.

Western Engineers Report on Chicago Transit Problem

ACCORDING to the report of the committee on local passenger transportation of the Western Society of Engineers, approved by the board of direction on Feb. 19, 1924, the particular development which seems likely to give the greatest relief is the co-ordination of the surface and elevated railways. This should be coupled with the extension of tracks and other facilities to serve the ever-growing traffic in all parts of the city. Various suggestions for the solution of Chicago's transit problem were given in the issues of ELECTRIC RAILWAY JOURNAL for Feb. 16 and 23. The report of the committee now given summarizes the conclusions reached as the result of studying the various proposals.

An important consideration is that the facilities of the transit lines should offer the least interference with other traffic and promote the comfort and convenience of the largest number. The following principles are recommended as the basis for the solution of the present problem:

1. Construct a limited system of subways and expand the existing elevated and surface railways, including bus-line feeders where desirable, to form a comprehensive and unified system of transportation.

2. Consolidate and co-ordinate all surface and elevated lines, so as to insure unified operation.

3. Establish on the unified system within the limits of the city, a single primary fare, based on cost of service, with free or paid transfer between rapid transit and surface lines, as the economics of operation determine to be necessary.

4. Limit the rate of expansion of the unified system to that which shall be reasonably justified by the demands of traffic.

5. Route through traffic so as to avoid congested centers, so far as feasible.

6. In view of the fact that financial losses, interference and other difficulties are driving private capital from the local transportation field, it is believed that unless legal and financial conditions can be changed so as to again attract private capital, the credit of the city must be used to acquire the present surface and elevated systems, as well as for the extensions required.

7. If the unified system is financed by the city, operation should be by a private corporation under lease, supervised by a board of commissioners. These commissioners should have long tenure of office and should be competent persons selected from the financial, engineering and commercial fields.

The following principles are believed to be fundamental in determining the type of construction to be used for rapid transit:

1. The wide extent of territory to be served, the low density of population and the limitations imposed by the cost render the so-called comprehensive system of subways impracticable.

2. A modern elevated type should be the standard construction for the city, owing to its lower cost. (Open-cut construction may be substituted for elevated structure where applicable.)

3. The proper function of subways in Chicago will be to accommodate elevated trains and surface cars in areas where space on or above the surface is inadequate to accommodate the needed transportation.

In order to extend the area occupied by the downtown district, the following principles are recommended:

1. Improve the conditions south of Loop district as follows: (a) Straighten the Chicago River from Polk Street to Eighteenth Street. (b) Open through north and south streets between State Street and the relocated river. (c) Rearrange the steam railroad facilities south of the Loop district to permit the opening of streets as described in (b).

2. Provide additional transportation facilities throughout an enlarged area surrounding the present loop.

3. Reduce the allowable height of buildings, in order to decrease the maximum density of occupation.

PRIVATE AUTOMOBILES, CABS AND BUSES

These facilities have their place in the development of the city and the solution of its transportation problem.

The motor buses are valuable as extensions of surface or rapid transit lines, in districts where the rate of fare is not an essential consideration and on streets where fixed tracks are objectionable.

Among the many street improvements which have been suggested to facilitate the handling of all classes of traffic, the following are recommended:

1. Open up and widen important through streets.

2. Remove the produce market from South Water Street to a less congested location.

3. Separate street and railroad grades where traffic requires.

4. Complete paving through the outskirts of the city of the arterial streets necessary to connect with state and county highways.

The following improvements in use of street space and in handling of street traffic are recommended:

1. Establish loading zones for street cars in congested districts where feasible.

2. Prohibit parking in streets and alleys of the downtown district between the hours of 7 a.m. and 6:30 p.m.

3. Limit the height of the crown of street paving in order to facilitate the full use of streets.

4. Widen pavement at loading points of buses, when possible, so as to permit free passage of other vehicles.

5. Develop and extend a co-ordinated through-street system and install adequate signs throughout.

6. Install additional automatic and uniform signal lights at congested intersections.

Among the many suggestions which have been made, the following are believed to have sufficient merit to justify a full investigation, but are not recommended without such investigation:

1. Use of steam railway right-of-way and tracks in connection with the rapid transit system.

2. Provision for additional parking space in the vicinity of the Loop district.

3. Reduction of terminal loops and switchbacks of surface line cars in the downtown district.

4. The policy of fixed instead of open bridges over the Chicago River, with provision for barge transfer and terminals.

5. Use of sidewalk subways, elevated sidewalks or arcades in the Loop.

6. Use of special assessment policy to meet cost of construction of transportation facilities in excess of that which would be supported by a reasonable rate of fare.

The News of the Industry

Loop Favored

Engineers Vote for Completion of Loop in Cincinnati—Representatives Will Visit Other Cities

Cincinnati, Ohio, is overwhelmingly in favor of the completion of the entire loop of the proposed rapid transit system in Cincinnati, even though it would involve an issue of $6,000,000 of additional bonds, according to the consensus in the first answers to the questionnaire sent out by the Engineers' Club of Cincinnati. It was explained in the questionnaire that the $6,000,000 already authorized for the project would complete it from Canal and Walnut Streets to Oakley. In their answers the engineers expressed themselves almost unqualifiedly in favor of the completion of the loop even at added cost. The votes against the further issue of bonds were registered because it was believed that the system as far as Oakley should first be tried out.

Less than ten of those who answered the questionnaire voted against the project as it has been planned. Some of the engineers qualified their answers and some failed to vote either way, saying that they did not understand the idea as at present projected. The engineers were about evenly divided in their opinions as to whether the system should be operated by the Cincinnati Street Railway or by a separate utility organization, but there was a decided majority against the bond issue of $2,500,000 for equipment for municipal operation of the lines. Although the majority of those whose answers were announced favored combined passenger and freight service over the system, there was almost an equal number of the engineers who would restrict the use of the system to the transportation of passengers only.

The questionnaire was sent to more than 1,500 of the foremost engineers of the Cincinnati district by the public relations committee of the Engineers' Club, to obtain the opinion among the engineers as to the future possibilities of the rapid transit system from an engineering point of view. Approximately 150 answers were represented in the announcement made at a meeting of the Engineers' Club, March 1, as part of the first returns.

As far as the transit situation is concerned affecting the local railways, there have been no further public moves recently with respect to either company. In order better to understand that problem, however, investigation of electric railway conditions in eight cities will be made by a special committee representing the Cincinnati, Ohio, city administration before consideration is taken up of a joint report of the Cincinnati Street Railway and the Cincinnati Traction Company, submitted to the street railroad committee of Council on Feb. 21. The report contained the terms upon which the two companies propose to adjust the traction situation in Cincinnati. The investigation trip started March 2. The committee will visit Boston, Toledo, Cleveland, Rochester, New York, Baltimore, Philadelphia, Washington and Pittsburgh. The first city to be visited is Toledo.

The City Council has appropriated $2,500 for the trip. Within three days after the return of the committee conferences will begin with the officers and attorneys of the Cincinnati Street Railway, which is to succeed the Cincinnati Traction Company as the operating company.

Bus and Home Rule Bills Introduced in New York

Minority Leader Bloch has introduced in the New York Assembly a bill adding a new article to the general city law relating to municipal bus and trackless trolley lines. The measure reflects the administration ideas and legalizes the existing bus lines in Greater New York and permits all cities to acquire, own and operate bus or trackless trolley lines.

A 5-cent fare for passengers is prescribed. Deficits are to be made up by appropriation of public moneys or by the issuance of further revenue bonds. Property may be taken over by purchase or condemnation, and the city may operate or maintain a bus or trackless trolley parallel to any other trolley line provided if such new line parallels on the same street an existing trolley for more than 5,000 ft. a certificate of convenience and necessity shall be obtained for its operation.

In short, by the terms of the measure blanket authority is conferred on the governing legislative body of all cities to go into the business of transporting passengers at 5-cent fare, the only restriction imposed being that in case of a continued deficit in operating the city may discontinue operations, but the measure would obligate the city to pay all outstanding obligations, and for any bonds of the trackless trolley or bus project that the city itself owned it would have no preference in payment over other creditors.

Mr. Bloch has also introduced in the Assembly a measure known as the city home rule transportation law, granting to cities of the state power to construct, acquire, own, operate and regulate transportation facilities, and transferring certain powers, duties and jurisdiction of the public service commission and of the transit commission. This measure is virtually the Walker-Donohue bill of last year adapted to the home rule amendment to the Constitution approved by the people in November.

Co-operation Established

Oakland Apparently Realizes More Will Be Gained by Working Together Than Working Separately

Oakland's one-man car war has reached the armistice stage. The safety cars are still running, but threats against them have ceased. In fact, the city authorities have voted to co-operate with the Key System Transit Company in a traffic survey. This offer has been accepted by the company and it seems likely that peace will follow.

Matters came to a climax on Feb. 14 when the application of the Key company for a permit to run a bus line in East Oakland came up for a vote in the Oakland City Council. Mayor Davie and Commissioner Moorehead favored granting the operating rights to the Peerless Stage Company in order to "end this traction monopoly," but Commissioners Carter, Baccus and Colbourn would not accede to this. Instead, they offered a plan for a traffic survey which finally was accepted by the Mayor and Mr. Moorehead.

It so happened, however, that the traction company had already made plans for a similar survey. Realizing that the rapidly growing needs of the city demanded greater knowledge of conditions on its part the company had engaged the services of Richard Sachse to study the situation and report upon it. So, at a later meeting, Feb. 18, a resolution was adopted by the Council soliciting co-operation in a traffic survey with the Key company.

This resolution pointed out that two surveys, conducted independently of each other, would cause duplication of work, delay in completion and inharmonious recommendations. Six questions were then put to C. O. G. Miller, head of the Key system. The high points were:

What is to be the general scope of the survey?

Will the company agree to carry out the recommendations of Engineer Sachse, so far as practicable?

Will the company give the city's experts access to its books, records and data?

Will the company welcome co-operation with the city?

Must all improvements await completion of the survey or will the company, from time to time, make improvements which may be recommended?

On Feb. 23 Mr. Miller answered these questions categorically. Most assuredly, he asserted, the Key company will permit its expert, Mr. Sachse, to co-operate with the city's experts in an exhaustive survey. Most assuredly the company will give access to its books. He was also willing to confer as to the scope of the survey and he also agreed to abide by the recommendations of such joint survey. In regard to the installation of improvements, Mr. Miller said he believed that improvements agreed

upon should be made as rapidly as possible and need not await the completion of the entire survey.

In the meantime, the Rosalie, erstwhile municipal bus run by the city for four months as an experiment, has been returned to the manufacturer, the city auditor having refused to release funds to pay for her, due to a technicality in the law.

Civic clubs were canvassed, citizens were harangued and petitions were circulated in the interest of city bus operation, but Oaklanders refused to wax enthusiastic over the proposition.

And so the matter died.

As for the Peerless Stage Company, its application for a permit to run a bus line between Alameda and Oakland at a 5-cent fare as compared with the 6-cent fare charged by the Key company has been referred by the Alameda City Council to the State Railroad Commission. It is now trying to induce that body to grant this permission. Decision has been reserved.

Application Made for Right to Build Philadelphia Subways

The city of Philadelphia on Feb. 29 took the first actual step toward construction of the Broad Street and Chestnut Street subway. That day application was made to the Public Service Commission for the necessary certificate of convenience to start the work outlined in step No. 1 of the high-speed transit program. There were no objections to the request and it will be granted by the commission.

During the hearing before the commission, Ralph T. Senter, vice-president of the Philadelphia Rapid Transit, explained that the company favors underground passageways for pedestrians between stations in the projected Chestnut Street subway. This subway, he said, should be completed in about three years after the start of actual work.

Board of Estimate Sued in Staten Island Case

Mayor Hylan, Comptroller Craig, Murray Hulbert, President of the Board of Aldermen, and the five Borough Presidents, all members of the Board of Estimate, were made defendants in a suit for $75,000 brought in the Richmond County Supreme Court recently by Mrs. Eva Chrampanis of Graniteville, S. I., whose husband was run over and killed by a city-owned trackless trolley car on Staten Island on March 22, 1922.

The case was opened some time ago when an attorney of St. George filed a complaint naming the city of New York as defendant. Assistant Corporation Counsel Draper claimed at that time that the city was operating the line without right and that it was not responsible for accidents. This claim of Mr. Draper came as a surprise to counsel for the complainant, and it was immediately decided to begin proceedings against the members of the Board of Estimate instead of against the city of New York.

The matter was referred to in the ELECTRIC RAILWAY JOURNAL issue of Feb. 9.

W. C. White Urges Co-operation of All Transportation Agencies

"Steam and electric railroads should be authorized by legislation to own and operate their own motor vehicles in selling transportation to the public. Through their experience in marketing transportation they are the logical operators of buses and motor trucks, supplementing their present service."

That is the keynote of an article, "The Bus and Truck in Transportation," contributed to the *Nation's Business* by Walter C. White, president of the White company.

Mr. White says that it seems to him there must be something wrong in the mental attitude of a trained transportation engineer who says he does not expect to be able to make buses pay.

Mr. White believes buses and motor trucks will play a major rôle as indispensable units in one sympathetic system embodying transportation by rail, water and motorized highways. He says co-operation and co-ordination, instead of competition, will solve problems of transportation in the relationship between buses and trucks on one hand and steam railroads and electric railways on the other.

In expressing this view in his magazine article, Mr. White quotes Elisha Lee, vice-president of the Pennsylvania Railroad System. He is also in agreement with opinions similarly expressed by Britton I. Budd, president of the American Electric Railway Association, and by such outstanding figures in the recent transportation conference as Herbert Hoover, Secretary of Commerce, and Julius Barnes, president of the United States Chamber of Commerce. Mr. White writes:

> The bus and truck would not exist today in anything like the quantity they do unless there was a public demand for them. The bus is not a competitor of the electric railway. If all the buses in operation today were removed it would make very little difference in the number of people carried by the electric railway. The touring car—individual transportation which everybody likes—is the active competitor of the railways. There are several instances of high-class bus service that pay well without showing any influence on street car revenues. The right kind of service is getting people to ride in buses instead of in their own automobiles, and those same people would drive their own cars rather than take the street car.
>
> It is important that our steam and electric railroads should enter the field of motor transportation now, and direct its development in order the better to offer the kind of service the public demands and is willing to pay for.

Mr. White emphasizes the belief of the motor industry that the same principles should govern the operation of motor vehicles as common carriers as are applied by state regulatory commissions in the operation of other public utilities. He says:

> For example, the motor bus carrying passengers for hire is, in its very nature, a monopoly, and as such should not be permitted to operate until it has applied for and secured a certificate of public convenience and necessity from a fair state commission. It should be required to carry public liability insurance adequate to indemnify injury to persons and property.

Tax questions affecting the bus and truck in a co-operative and co-ordinated system of transportation are treated from the standpoint of solution in Mr. White's article. On this point Mr. White writes:

> The motor industry has taken a definite stand on taxation. It contends that the cost of construction of improved highways for the use of the general public should be paid for out of funds raised by general taxation and that the entire annual budget for the maintenance of improved highways used by motor vehicles should be paid out of special taxes levied on the motor vehicle.

Films of the Industry for the Smithsonian Institution

Watterson R. Rothacker is preparing to present to the Smithsonian Institution for preservation to posterity a motion picture with scenes taken from the various movies which that film company has made in the past dealing with different phases of public utilities. Railroads and electrical companies will be represented and power plant scenes will show the source of electrical energy in 1924. The electrical industry as a whole will be featured, even beyond its application to public utilities. The methods of financing utilities will be touched upon, showing banking methods as practiced in the present year. The Rothacker Film Company says that these scenes will be selected with a view to giving people æons from now a comprehensive picture of utility enterprises in Anno Domini, 1924.

Improvements in Schenectady Deferred Until June

With no objection on the part of those appearing at the hearing, the Public Service Commission under an order issued Feb. 25 extended to June 1 next the time in which the Schenectady Railway, Schenectady, N. Y., is to comply with an order of the commission on April 4, 1923, to make certain changes in its plant and equipment to improve the service.

Franchise Conferences Proposed at Birmingham

Conferences between members of the City Commission at Birmingham, Ala., and Lee C. Bradley and J. S. Pevear, co-receivers of the Birmingham Railway, Light & Power Company, are to be held soon to discuss extensions of certain franchises of the company for a period of thirty years. It is stated that there are many franchises which will expire in six to seven years, which the receivers desire shall be extended. Members of the City Commission are understood to have agreed tentatively upon the conditions to be asked for the extensions.

Consent of the city to the separation of the Tidewater line into two sections with the elimination of quite a lot of track, including a number of railroad crossings, has been withheld by the commission. In the event that the purchasers of the Birmingham Railway, Light & Power properties at foreclosure on March 24 will not take the Tidewater line in its present condition, it is stated that it probably will be allowed to remain in the hands of a receiver unless some other buyer is found. Further discussions of the Tidewater situation, however, are expected to be held shortly between the commission and the receivers before the sale day.

Terms Outlined for Proposed New Columbus Grant

Tentative terms for a blanket franchise for the Columbus Power, Railway & Light Company, Columbus, Ohio, have been presented to the Council. An unofficial summary of the terms of the new grant says that it proposes the following:

A 6-cent cash fare, with five tickets for a quarter. (The same as at present.)

An owl car fare of 10 cents. (The same as at present.)

Universal transfers with the company given the right to designate transfer points.

Not more than 1 mile of new extensions a year unless the company can obtain the capital therefore at "reasonable" rates of interest.

That the company shall not be required to pave or repave, surface or resurface, any part of any street.

Research Graduate Assistantships

The University of Illinois maintains fourteen research graduate assistantships in its Engineering Experiment Station, for each of which there is an annual stipend of $600 and freedom from all fees except matriculation and diploma fees. These are open to graduates of approved American and foreign universities and technical schools who are prepared to undertake graduate study in engineering, physics or applied chemistry. These appointments are for two consecutive collegiate years, at the expiration of which period, if all requirements have been met, the degree of master of science will be conferred. Half of the time is required in connection with the work of the department to which assignment is made, the remainder being available for graduate study. Research work and graduate study may be undertaken in various branches of engineering, including electric railway engineering.

Nominations to these positions will be made this year from applications received by the director of the station each year not later than April 1. Preference is given those applicants who have had some practical engineering experience following the completion of their undergraduate work.

Additional information may be obtained by addressing the director, Engineering Experiment Station, University of Illinois, Urbana, Ill.

New Information Bureau Formed in the South

The organization of the North and South Carolina Public Utility Information Bureau has been perfected with offices in Raleigh, N. C., and Columbia, S. C.

The purpose of the organization, according to the announcement, is to seek through the distribution of accurate information a clearer understanding on the part of the public of the aims and problems of the utilities in the two states. By this means it is hoped the utilities may be aided in contributing further to the industrial development and progress so essential at this time for the two Carolinas.

Many prominent men in the utility field directed the organization of this bureau and will continue their activities under S. E. Boney, selected director. The executive committee is composed of P. A. Tillery, chairman; Stuart Cooper, vice-chairman; N. A. Cocke, R. J. Hole, Raymond Hunt, F. H. Knox and George B. Tripp.

In announcing the organization, Mr. Tillery said that the information bureau was designed to supply the people with useful and accurate information and that it was the bureau's hope to establish a partnership of understanding with the public, just as there now existed in a large measure a partnership of investment.

Street Cars Do a Greater Business than Ever

"Are Street Cars Doomed?" was contained on a page of the program prepared by the transportation department of the Chicago Surface Lines, Chicago, Ill., for one of a series of shows which each department is giving for the entertainment and education of the other departments of the system. The item ran as follows:

"There are 2,886,121 people in Chicago and 218,991 passenger autos. In each 100 automobiles passing along Michigan Avenue are 180 passengers. If each Chicago owned automobile came into the Loop area each morning the passengers at this rate would total 394,184, while 300,000 passengers enter the Loop in two morning hours by surface and elevated cars.

"The 218,991 passenger autos would each require at least 20 ft. of space in the procession, and might run two abreast at 15 miles per hour. Allow ten streets for entrance at this rate, which is very liberal, and the procession in each street would take two and one-half hours to pass. Imagine ten streets choked by autos, two rows abreast each way for two and one-half hours, to bring in the passengers now carried by cars of the surface and elevated lines.

"Ten years ago the rides on electric cars per year per inhabitant of Chicago totaled 329, in 1923 the rides were 356. In spite of the enormous increase in private automobiles street cars do a greater business than ever."

Ordinance to Oust Railway.—The Village Council of Maumee, a suburb of Toledo, Ohio, will have before it for passage at its next meeting an ordinance to oust the Maumee Valley Railway, from the River Road between Detroit Avenue and Wayne Street in Maumee. Mayor John A. Smith and Councilmen have expressed the opinion that there is no doubt but that the measure will pass. The street from which the cars would be ousted is now being paved and the village officials want the traction company to move its tracks to the middle of the street, which would cause them to assume a big proportion of the expense of the paving. The traction company and the village have been at loggerheads, too, over a renewal of its franchise, which expired about four years ago.

Bus Bee Buzzing in New York State Capital.—J. J. Dunnigan and Joseph E. Kingsley, Democrats from the Bronx, New York City, introduced simultaneously in the Senate and the Assembly on Feb. 27 a bill empowering the city of New York to establish, own, operate and finance a bus line along the Grand Concourse in the Borough of the Bronx from 138th Street and Mott Avenue to Mosholu Parkway. The rate of fare on the line is to be 5 cents forever and the deficit of operation is to be paid for by the taxpayers. At Albany the appearance of this measure is generally looked upon as a gesture to make a newspaper story for one of the big dailies. The act may pass the Senate, but appears to have little show in the Assembly, unless the lower house should "wish it onto" the city of New York.

No Comment on Paving.—The Philadelphia Rapid Transit Company, Philadelphia, Pa., said recently that it had no comment to make with regard to an agreement reported to have been reached with the Jenkintown Borough Council regarding the paving of Old York Road between the borough lines. Under the agreement it is said that the company will pay the borough $20,000 and turn over to it property rights in block paving now between the tracks, worth about $17,000. In return the franchise under which the company operates through Jenkintown will be discontinued and the company will be relieved of its annual license payments.

Mayor Protests Viaduct Fee Proposal.—Mayor W. W. Gordon of Kansas City, Kan., recently reiterated his refusal to relinquish to the Kansas City Railways rent on the inter-city viaduct, so the L road might be rebuilt in compliance with an order of Judge Kimbrough Stone. Mayor Gordon said that if Judge Stone issues an order that the city must relinquish the rent, the city will comply with the mandate, but the city will not sign an agreement to waive the consideration permanently.

Dinners Edible and Edifying.—In order that employees may become better acquainted and learn more about the company in general, the Elmira Water, Light & Railroad Company, Elmira, N. Y., recently began a series of dinners, at which various features of the company's operations will be discussed. The first dinner was given on Feb. 26, at which sixty-seven employees representing all departments were present. At this dinner, the object of which was explained by F. H. Hill, vice-president and general manager, the gas end of the business was discussed, including the progress shown in that department in 1923 and the company's aspirations for 1924.

Backs Improvement Plan.—The Association of Commerce is strongly back of the movement to obtain additional transportation facilities in Racine from the Milwaukee Electric Railway & Light Company. Recommendations which have been made to the company include the establishment of a bus serrvice from the north end of North Main Street to the zoo grounds.

Foreign News

Tickets and Fares on London Tramways

Return tickets on the London County Council tramways of London, England, issued to central termini are to be made available for return from any terminus so long as the fare originally paid is not less than that applying to the point from which the return journey is made, according to a report by the highways committee adopted by the Council. With regard to the issue of season tickets, the committee held that objections were insuperable.

On the question of increasing the length of fare stages, it was considered impracticable to increase the length of the 1d. stage by less than one section, which would raise it from 1.2 miles to 1.8 miles. Consequential increases would have to be made in the distances corresponding to other fares. The general manager estimated the risk of loss would be about £450,000 a year, which was too great to justify any such change. In regard to a proposed reintroduction of ½d. fares, the shortest distance for these would be one section of 0.6 mile, and the approximate loss would be £500,000 a year. To recoup this and the loss on longer stages, the cars would have to carry 185,000,000 additional passengers a year, and it did not seem reasonable to anticipate the increase of 30 per cent.

Paris Street Car and Bus Fares Increased

The first and second class fares on all Paris street cars and buses, which are operated by the "Transports en Commun," have been increased according to the following schedule:

	Fare, Centimes Present	Former
First Class:		
One section	45	40
Two sections	60	55
Second Class:		
One section	30	25
Two sections	45	40

Fares on the Metropolitan and Nord-Sud subway lines have undergone a like increase. Although these lines are controlled by the same operating company, there are no transfers between them. Fares are now 60 centimes for first class and 35 centimes for second class.

This change is said to place Paris street transportation among the costliest in the world. At normal rate of exchange the first class street transport fare would be say 9 cents and 12 cents, although at the present depreciated value of the franc they would be much less on a gold basis. While it is stated by the authorities that the new fares are but 75 per cent above those existing before the war, they are actually greater, since the distance covered in a zone is materially less, so that in some cases a ride which formerly cost 15 centimes now has become 55 centimes. A first class ride that formerly cost 20 centimes on the trolley and 25 centimes on the bus now costs uniformly 75 centimes if the whole distance of the route is covered. Although not all passengers cover the entire distance, it is manifest that the Paris organization intends to grade the fares more closely in accordance with the length of haul, so that the revenue per mile on the long haul is approximately the same as on the short haul.

Some dissatisfaction has been expressed by residents of Paris on account of the fare increases, which work out to be 266 per cent for the second class and 275 per cent for the first class. This has also brought out a discussion as to whether it is an economic operating plan to furnish both first and second class on public service street and subway lines.

A critic has just brought to light the fact that by the inordinate use of free passes there is lost annually to the operating companies of the street and subway lines and the boat service on the Seine something like 19,000,000 francs.

British Tramway Receipts Off

Particulars of accounts and statistics of the tramway and light railway undertakings in Great Britain for the year ended Dec. 31, 1922, for companies, and March 31, 1923, for local authorities are contained in the annual return issued by the Ministry of Transport. The publication contains, as usual, elaborate statistical details for every separate undertaking.

As shown in the return, the total route mileage open for traffic was 2,594, of which 1,788 miles were worked by local authorities and 806 miles by companies. The gross receipts were £31,264,141, as compared with £32,523,339 in 1921-22, and working expenditure was £23,831,523, against £26,835,292 in the preceding year, leaving net receipts of £7,432,618, or £1,744,571 more than for the preceding year. The number of passengers was 4,349,041,241, an increase of 92,722,549 or 2.18 per cent. The miles run amounted to 351,910,233, an increase of 19,830,368 or 5.97 per cent. Of the total mileage run, 98.92 per cent was by electric cars.

Staggered Hours Proposed for Paris

Coincident with the recent increase of fares on street cars, buses and subways the Paris municipal authorities are studying the means of serving a continually increasing traffic. The consulting committee which recently met at the Hotel de Ville has issued a communiqué to the effect that an important exchange of views has been going on between the parties interested, including the users of public transport services. The principal resolution was to the effect that it would be desirable if various lines of business would spread the hours of arrival and departure of their employees over a more extended period of time than at present. This is quite similar to the plan recently proposed in New York.

The general French point of view, however, is that public transport should be made to serve the public, not that the public should bow down to the vagaries of the companies. The word is perhaps ill advised, but France is a very democratic country. The public registered its opinion that the street cars, the auto buses and the subways should be subservient to the vagaries, at least the variation in the method of life and the conduct of business of the public. There the matter rests for the moment, but it is bound to come to the surface again at any time.

London Tubes Are Linked

The construction has just been completed of new tunnels to connect in Camden Town, North London, the lines of the Charing Cross & Hampstead Railway and the City & South London Railway. For over half a mile there are now six tube tunnels almost side by side. Sometimes, however, one is above another, and sometimes they cross (at different levels). The scheme has been arranged so as to avoid having grade crossings. This is necessary as during rush hours there may be forty trains per hour on each branch, making 160 trains per hour to be handled at the junctions in all directions. When the work is done trains will be run from either Highgate or Edgware to Charing Cross, or switched via Euston to Clapham Common and eventually on to Merton to the southwest of London.

The construction of the new tunnels at Mornington Crescent (Camden Town) has given direct employment to about 500 men. The iron segments for lining the tunnels amount to 13,000 tons, and 80,000 tons of earth have been excavated. Despite the engineering difficulties, the work has been carried out with remarkable precision; the margin of error at any time in cutting the tunnels was never more than a quarter of an inch.

Trailers to Be Abandoned in Paris

Among the measures proposed recently by the Prefect of Police in the city of Paris is the entire elimination of trail cars in the area which lies within the circle of the grand boulevards. It is admitted that trailers are necessary, or at least desirable, to handle the suburban traffic from the boulevards to the area without the fortifications. There are very few street car lines running from the city beyond the fortifications and most of the suburban lines end at the various octroi gates.

The trailers used in Paris are large and cumbersome. Considerable time is wasted when they change ends. This is an inconvenience and consumes a great deal of time in the center of the city, since few of the Paris street car lines run through across the town. There is not even a continuous belt line, and at least three changes are necessary to go out and back to the starting point.

Financial and Corporate

Acquisition of Chelsea Division Likely

Proposition Before Massachusetts Legislature to Make Boston Elevated the Only Railway in Boston

There is every prospect this year that by legislative direction the Chelsea division of the Eastern Massachusetts Street Railway will be taken by the Commonwealth of Massachusetts, for about $3,000,000, leased to the Boston Elevated Railway and merged with the Elevated system so that Revere Beach may have a single ride and single fare to all parts of the Boston Metropolitan district.

Under this plan the state will take the Chelsea division by the right of eminent domain. It will lease it to the Boston Elevated on a rental basis that shall cover the necessary bond issue, just as is done in the case of the tunnels and subways that are leased to the Elevated. An appraisal of that division by the Massachusetts Public Utilities Department places the value at $3,338,000. That is approximately the amount which will have to be paid, but as the property is not worth more than about $2,000,000 to the Elevated for operating purposes it is proposed to charge the Elevated rental on only $2,000,000 and to assess about $1,000,000 against the communities which are directly benefited. Revere and Chelsea would have to pay the principal part of it and smaller amounts would have to be paid by Malden and Everett and probably by the city of Boston. Revere and Chelsea are willing to pay. If the Elevated indirectly pays the $2,000,000 and the communities traversed pay $1,000,000 there will still remain $338,000 to be accounted for by trustees of the Eastern Massachusetts. They suggest that the Eastern Massachusetts be permitted to retain such property as the Elevated cannot use, probably the power house with its machinery and real estate, and the car equipment in the division. The Elevated can supply power much cheaper from its own modern plant in South Boston; and it cannot use the Eastern Massachusetts cars. These, then, the Eastern Massachusetts could sell or transfer and realize at least a part of the $338,000.

If the plan is adopted the Boston Elevated will become the sole street railway in the Boston Metropolitan district.

Fewer Passengers in District of Columbia

Figures compiled by R. G. Klotz, traffic engineer of the Public Service Commission for the District of Columbia relative to street car traffic, show that in 1923 the daily average number of pay passengers carried on the combined lines of the Washington Railway & Electric Company and the Capital Traction Company was 412,141, as compared with 416,882 in 1922. The average daily total number of passengers carried in 1923, which includes free transfer patrons and those who travel on passes, was 522,000, as against 529,000 in 1922.

In 1920 the two companies carried 436,863 pay passengers a day, or 24,000 more than were carried last year. In 1920 the total daily average of all passengers was 552,242, or 30,000 more than last year.

Walter C. Allen, executive secretary to the commission, believes the reduction in volume of traffic is due to the gradual cutting down of the war-time personnel in the government departments and the constant increase in the number of automobiles.

Merger Bill Passed by New Jersey Legislature

The merger bill proposed by the Public Service Corporation of New Jersey has been passed by the Senate by a vote of seventeen to one. It now goes to the House.

In support of the bill, Senator MacKay pointed out that the consent of the Public Utility Commission was a prerequisite to the consummation of a merger.

As has been explained previously in the ELECTRIC RAILWAY JOURNAL this is permissive legislation, and recourse to the authorization may or may not be had according to how the plan develops which the company is understood to have under consideration for realigning its corporate financial structure.

Moosic-Pittston Line to Be Abandoned

The Pennsylvania Public Service Commission has approved the request of the Scranton Railway to abandon that portion of the Moosic-Pittston line extending from the Lackawanna township-Moosic boundary line on the north to the southern terminal at Broad and Main Streets, Pittston. The decree of the commission sustains in its entirety the contention of the railway that the Pittston end of the line had been run at a loss and that further loss would be occasioned by the contemplated improvement.

The commission holds that with the Lauren Line, the Delaware & Hudson and the Central Railroad of New Jersey operating between Moosic and Pittston and the Wilkes-Barre Railway operating from West Avoca "the community will be adequately served." Further anticipating the construction of a modern highway by the state along the east side of the valley from Pittston to Scranton, the commission says that the building of such a road "will no doubt suggest the establishment of bus lines."

Louisville Railway Prospects Bright

Year 1924 Expected to Show Result of Program of Efficiency and Economy Recently Carried Out

For the year ended Dec. 31, 1923, the balance available for dividends from the earnings of the Louisville Railway was $489,542. This compares with $504,979 available for the same purpose for the year 1922. So reported President J. P. Barnes of the company at the annual meeting of the stockholders on Feb. 21.

At the same time directors declared a 5 per cent dividend on the preferred stock, representing a regular dividend of 1¼ per cent, and 3¾ per cent on back dividends. Dividends are on a 5 per cent cumulative basis. This leaves 11¼ per cent accumulative since October, 1918, no dividends having been paid from that date, until 1923. No common stock dividends have been paid since July, 1918. The 5 per cent is payable on March 10.

COMPARATIVE INCOME STATEMENT OF THE LOUISVILLE RAILWAY FOR YEAR ENDED DEC. 31

	1923	1922
Operating Revenues:		
Revenue from transportation	$4,255,772	$4,358,450
Other operating revenues	190,094	184,367
Total operating revenues	$4,445,866	$4,542,817
Operating expenses	3,078,522	3,190,232
Net revenue from operations	$1,367,344	$1,352,585
Taxes	396,000	388,000
Operating income	$971,344	$964,585
Non-Operating Income:		
Louisville & Interurban Railroad Company—Net income	127,256	145,982
Other non-operating income	37,816	17,813
Total non-operating income	$165,072	$163,795
Gross income	$1,136,416	$1,128,380
Deductions from Gross Income:		
Interest on bonds and notes	645,819	619,589
Miscellaneous debits	1,055	3,812
Total deductions	$646,874	$623,401
Balance available for dividends on stock	$489,542	$504,979

The year 1923 was the first complete year's operation under the plan which provides that all earnings shall be credited to a so-called barometer fund. From the fund are to be deducted operating expenses, taxes, interest on bonds and other debts, 5 per cent for preferred stock, and as long as the present rate of fare continues, and the barometer fund stands at $200,000 or more, 6 per cent dividend on common stock. Mr. Barnes explains that these sums have been withdrawn each month during 1923, and that the barometer fund, which stood at $350,000 on Jan. 1, 1923, was as of Dec. 31, 1923, depleted to $232,681, a net reduction during the year of $117,318. Mr. Barnes says that this result from the first year's operation is neither unexpected nor alarming, as several of the programs for improved economy and efficiency of service were not completed until some time after Jan. 1, 1923.

The company was particularly hard hit during the year. On the night of Jan. 15, 1923, the brick portion of the Fourth Avenue carhouse burned, with all its contents, including twenty-four passenger cars and ten service cars.

Plans were rapidly completed for a new fireproof sprinklered carhouse, with a separate office and recreation center, and the new carhouse and office were completed in October.

On Feb. 16, 1923, the carhouse at the southeast corner of Thirteenth and Main Streets was burned. In this fire sixteen cars were damaged, six of which have been repaired and placed in service.

The loss in the two fires was $270,195, but prompt payment by the insurance companies enabled the railway to proceed at once with the work of rehabilitation without any financial embarrassment and with no difficulties other than those incident to the reconstruction of the carhouses.

To replace cars totally destroyed and to provide sufficient additional trail car equipment to meet the growing needs of traffic, an order was placed last summer for fifteen new motor cars and twenty-five trail cars of the most modern type. These cars are being purchased in part with insurance recoveries and in part from the proceeds of the sale of $230,000 ten-year equipment trust certificates, Series "B," which are dated Jan. 2, 1924.

As a further precaution against possible losses from fire, the carhouse at Twenty-ninth and Broadway, which is the largest on the property, is now being equipped with automatic sprinklers.

Mr. Barnes says that great savings—and an improvement of service—have been realized from the general use of the single-truck safety car, of which 101 are in operation on city lines. Early in the year a general rerouting and improvement of schedules became effective. Fifty-five new safety cars were purchased during the year with the proceeds from the sale of $230,000 ten-year equipment trust certificates, Series "A," dated Jan. 15, 1923, similar to Series "B" previously described.

These are merely some of the outstanding things discussed by Mr. Barnes.

New Financing Plan for Detroit Municipal

A plan to refinance the Detroit Department of Street Railways, extending the D. U. R. purchase plan over a period of twenty years, is to be drafted by Clarence E. Wilcox, newly appointed head of the D. S. R. claims division. Announcement to this effect has been made by officials of the street railway department. The plan when drafted is to be submitted to the Mayor, to the Detroit United Railway and the City Council. It is announced also that in studying the various methods of refinancing, the advice and counsel of outside financial interests will be sought.

According to Ross Schram, assistant general manager of the municipal railway, the demand for extensions and improvements to the city system and for the additional cars and equipment is so great as not to permit it to be financed from the present income from operation, amounting to about $900,000 annually.

It is further announced that a sum is available from the $5,000,000 bond issue authorized by the voters last year sufficient to provide extensions contemplated within the next few years. In addition to this fund, $3,000,000 is stated to be immediately necessary for the purchase of new rolling stock. The present demands are attributed to industrial growth of the city, particularly on the west side. All previous daily records for passengers carried were recently surpassed when more than 1,600,000, persons were handled.

The reported acquisition of new locations for carhouses is denied by the commission. Work is being rushed at the city's Highland Park car shops to complete the twenty-five new trailers under construction. Requests have also been sent to car builders to rush work on the 100 new Peter Witt type cars ordered last fall and bids are to be asked for in the near future on 100 more Peter Witt type cars.

Railway in Readjustment

New Jersey Board Approves Rearrangement of Utility Properties on Atlantic Coast

The Board of Public Utility Commissions of New Jersey has approved a plan to permit the readjustment of the properties of the Atlantic Coast Electric Railway, and subsidiaries, the Atlantic Coast Electric Light Company and the New Jersey Water & Light Company, as sought to be carried out by the Eastern New Jersey Power Company.

A realignment was sought so that all of the property devoted exclusively to railway service shall belong to the Atlantic Coast Electric Railway and the balance of the property to the Eastern New Jersey Power Company. This plan has been modified with respect to the property to be owned by the Eastern New Jersey Power Company, the revised plan providing for the continued ownership by the New Jersey Water & Light Company of all of the property devoted to water service and the ownership of all of the property devoted to electric service by the Eastern New Jersey Power Company. In addition to the direct ownership of the electric property, including the power station, etc., by the Eastern New Jersey Power Company, the plan also contemplates the ownership of all of the stock and bonds representing the property of the railway and water company.

In support of the application, two appraisals of the property were submitted on behalf of the petitioner:

	Total Property at Present Prices	
Total Cost New	Cost New Less Depreciation	Plus $400,000 Additional Cash
$6,217,425	$5,678,320	$6,078,320
$6,259,416	$5,338,592	$5,738,592

Valuations of the property were also submitted by the board's engineer on several different bases of prices. The value corresponding to that just noted, at present-day prices, is as follows:

Cost New Total Property	Cost New Less Depreciation
$5,700,000	$4,625,000

The board concluded that the value of the property properly represented by the issuance of securities is $4,412,500. This total includes the $400,000 additional cash indicated previously, which with $75,000 cash included in the appraisals, provides $175,000 in cash for working capital and $300,000 cash for construction purposes.

The petitioner requested permission to issue the following securities for the Eastern New Jersey Power Company:

$3,500,000 par value of 6 per cent bonds, due in 1949
$1,250,000 par value of 7 per cent preferred stock
6,500 shares common stock, no par value

In order to make the securities comparable with the value determined by the board, it decided to permit the following securities to be issued:

$3,250 par value of bonds (at 85) to realize not less than	$2,762,500
Par value of 7 per cent preferred stock to be issued at par	$1,250,000

This will leave a balance of the total as determined by the board to be represented by the issuance of common stock amounting to $400,000. This amount will represent the value of the no par common stock.

First Presentation of No Par Value Stock Question

In its decision the board points out that this is the first time that the question of the approval or disapproval of no par common stock has been before it. The act of 1921, Chapter 284, permits corporations organized under the general corporation act to issue no par value stock. The new corporation was formed under that statute. After careful consideration of the act of 1906, the board has concluded that an electric company formed under the general corporation act, although a public utility, has the right to issue no par stock. In order to carry out the purpose of the act of 1921, however, the board feels it was necessary for it to state the value of the no-par stock.

The Atlantic Coast Electric Railway has outstanding at the present time $1,000,000, par value, of stock and certain underlying bonds and obligations which are proposed to be retired. The board has determined the value of the railway property to be $1,700,000, to which is added $25,000 to represent cash working capital, $50,000 cash for construction purposes—making a total value to represent the securities to be issued by the railway $1,775,000. Deducting $1,000,000 par value of stock now outstanding from this value leaves a balance of $775,000 to be represented by a like amount of bonds to be issued at not less than 85 per cent of par.

In accordance with the terms of the order the Atlantic Coast Electric Railway, West End & Long Branch Company, Sea Coast Traction Company, Asbury Park & Sea Girt Railroad and Sea Shore Electric Railway will all be merged.

The board has also approved the transfer of all of the preferred or common stock of the Eastern New Jersey Power Company to the Utilities Power & Light Corporation of Virginia.

A syndicate including Bonbright & Company and W. C. Langley & Company, New York, is offering $3,250,000 of the first mortgage 6 per cent bonds of the Eastern New Jersey Power Company at 95 and accrued interest to yield 6.40 per cent.

Preferred Stock of Recent Merger Offered

Pynchon & Company, New York, N. Y., are offering for subscription at $91 per share and accrued dividend to yield about 7.70 per cent 15,000 shares of the cumulative preferred stock of the North Carolina Public Service Company, Inc. It is explained that the company has been incorporated under the laws of the State of North Carolina and has acquired all of the properties, rights, franchises and other assets of the North Carolina Public Service Company. These properties include the plants, distribution systems, and business of the former Greensboro Electric Company, Greensboro Gas Company and High Point Electric Power Company, and the gas plant and distributing mains and electric railway system in High Point, as well as a lease of the Salisbury & Spencer Railway, which was formerly that of the Salisbury Light & Power Company and the Salisbury Gas & Electric Company. In addition, the new company owns 92 per cent of the entire capital stock of Salisbury & Spencer Railway, which property it operates under the lease.

The North Carolina Public Service Company, Inc., is controlled by the General Gas & Electric Corporation through ownership of the entire outstanding common capital stock, and the properties are under the management of the W. S. Barstow Management Association, Inc., New York City.

Auction Sales in New York.—At the public auction rooms of A. H. Muller & Sons there were no sales of electric railway securities this week.

High Mark in Employees Stock Ownership. — The Lake Superior District Power Company, Ashland, Wis., has a record of 100 per cent among its employees as stockholders in the company. It required approximately two weeks to enlist the support of every employee.

One Bidder for Pomeroy Property.—At the sale of the Ohio River Electric Railway & Power Company, Pomeroy, Ohio, by Harry Hartwell, receiver, acting under orders of the Federal Court, there was but one bidder, a representative of the protective committee acting for the bondholders. Under a requirement of the court in order to qualify as a bidder a bond of $10,000 had to be put up. This was done by none except the representative of the bondholders, and, therefore, there could be but one bid. The line was first offered from Ash Street in Middleport eastward, which consisted of the old line. On this $85,000 was bid. Then the Hobson extension was offered and $4,000 bid on that. Then the whole line was offered, and a bid of $89,000 was made on that. It was knocked down on this bid subject to the approval of the court.

Seeks Relief from Maintaining Fund.—The Key System Transit Company, successor to the San Francisco-Oakland Terminal Railways, has applied to the California Railroad Commission for a modification of the decision of the commission to relieve the petitioner from the necessity of further setting aside in cash the depreciation reserve provided for in the commission's order. The applicant states that since the making of this order the San Francisco-Oakland Terminal Railways has been reorganized and put on a firm financial basis, the reorganization plan having been formally approved by the commission, and that no further necessity exists for the requirement that the said funds should be created and maintained.

$54,000 of Bonds Authorized.—The securities division of the Wisconsin Railroad Commission has authorized the Madison Railways to issue $54,000 of first mortgage 5 per cent bonds to reimburse its treasury. These bonds are to be sold at not less than 75 per cent of par.

Net Income Increases.—The City of Detroit, Department of Street Railways, reports a total operating revenue of $1,973,453 for January of the current year. This compares with $1,712,228 in January a year ago. The revenue from transportation included in the above amounts was $1,926,419 and $1,620,210 respectively. The total operating expenses increased from $1,221,492 in January, 1923, to $1,423,186 in January of this year. The net income for the month of January, 1924, was $89,023. The similar figure a year ago was $70,558. The total number of passengers carried in January of the current year was 41,451,043. In January of last year the number was 40,167,868. These figures include both revenue and transfer passengers.

Sioux City Gold Bonds Offered. — Halsey Stuart & Company, New York, are offering $2,550,000 of the Sioux City Gas & Electric Company's first mortgage twenty-five year 6 per cent gold bonds, known as Series B. The bonds, due Feb. 1, 1949, and non-callable for ten years, are being sold at 98 and interest, yielding about 6.15 per cent. The Sioux City Gas & Electric Company owns all the outstanding capital stock of the Sioux City Service Company, which owns and operates the electric railway and heating business in Sioux City, Ia.

First Mortgage Gold Bonds Offered.—Baker, Young & Company, Blodgett & Company and Arthur Perry & Company, Boston, Mass., are offering $1,000,000 of Dubuque Electric Company, Dubuque, Iowa, first mortgage 6 per cent gold bonds due April 1, 1942. These bonds, $3,200,000 outstanding, which includes bonds recently issued, are secured by a first mortgage on all franchises and property of the Dubuque Electric Company. The value of the property, as established by appraisals made in 1920 and subsequent expenditures, is about $6,500,000, or more than twice the par value of outstanding bonds.

Petition for Abandonment. — The Colorado Springs & Interurban Railway has asked the Colorado Utilities Commission for permission to cease operating its line from Colorado Springs to Roswell, a distance of about 3 miles. In its application the company sets forth that the branch line cost $7,900 to operate last year, whereas only $572 was received in revenue. The company recently informed the City Council that it did not desire a renewal of its city franchise.

First Dividend in Nine Years.—The directors of the Toledo, Bowling Green & Southern Traction Company, Findlay, Ohio, recently declared the first dividend on the common stock in nine years, authorizing a payment of 1¼ per cent. Edmund Kerper and H. W. Kinney were elected directors.

Deficit After Dividends in Providence.—The report of the United Electric Railways, Providence, R. I., for the year ended Dec. 31, 1923, shows a deficit after dividends of $275,768, compared with a surplus of $40,717 for 1922. The deficit for 1923 before payment of $206,267 in dividends early in the year was $69,501, against net income of $370,691 in 1922. Operating revenues dropped $234,109 last year and operating expenses increased $176,250.

Operations Discontinued.—The Pennsylvania & Ohio Traction Company, which for twenty-three years has operated an interurban line between Conneaut and Jefferson through Ashtabula, ceased operations on Feb. 29. Permission to discontinue service was granted by the Ohio Public Utilities Commission following a recent hearing. In its decision the commission found that for the last five years the Pennsylvania & Ohio Traction Company line had a loss of more than $100 a day.

Balance Shows Falling Off.—For the month of January the gross earnings of the Virginia Railway & Power Company were $925,885, against $909,439 for the same month a year ago. The operating expenses, maintenance, taxes and rentals were $578,605, compared with $550,912 for January a year ago. The net earnings showed a falling off of $11,247, being $347,280 in January, 1924. The balance after the consideration of depreciation and renewal reserve was $120,884, a decrease of $28,794 over the same month in 1923. The total assets of the company on Jan. 31, 1924, according to its financial exhibit, were $51,862,132.

Collateral Issue Offered.—A syndicate headed by J. A. Sisto & Company, New York, is offering at 96½ and interest to yield more than 6.80 per cent $8,000,000 of the Montreal Tramways & Power Company five-year 6 per cent collateral trust bonds. The bonds are dated March 1, 1924, and are due March 1, 1929. Under the terms of the contract between the Montreal Tramways and the city of Montreal the Montreal Tramways Commission is obliged to adjust the fares to provide the Montreal Tramways with sufficient revenue to pay all operating expenses and maintenance renewal fund payments, and an annual return to the company of at least 6 per cent on the capital value of the company's property, and on such additional capital expenditure as may be made from time to time. The amount of revenue thus provided under the contract is more than sufficient to pay the 5 per cent interest on Montreal Tramways 5 per cent debentures and 10 per cent dividends on Montreal Tramways stock, which are hypothecated as collateral for the above Montreal Tramways & Power Company's five year 6 per cent bonds. The Tramway & Power Company owns a majority of the tramway common stock.

Traffic and Transportation

Philadelphia Fare Upheld

Superior Court of Pennsylvania Decided Against City—Also Upholds $200,000,000-Plus Valuation

The 7-cent cash fare, with four tickets for a quarter, now being charged by the Philadelphia Rapid Transit Company was upheld on Feb. 29 by the Superior Court of Pennsylvania in a decision dismissing an appeal brought by the city against the order of the Public Service Commission authorizing the company to maintain the rates mentioned. In the same decision the court supported the Public Service Commission's finding that the valuation of the Philadelphia Rapid Transit property is $200,000,000 and upward. In upholding the validity of the present rate of fare, Judge Linn of the Superior Court held that the Public Service Commission has a right to fix rates irrespective of any ordinance of Council or any prior agreement.

The court said that the appeal really brought up only one contention, namely, that the rate charged is unreasonable in the sense that it yields a larger net return than appellants thought should be earned on the fair value of the property devoted to the public service. The court said in part:

The company is entitled to receive a reasonable return for the services it furnishes and no more; the public is entitled to receive an adequate return for the reasonable rate it pays and no more.

1. It is said the commission made no definite valuation. The law does not require one. It may be made when necessary or desirable; if, in the course of its inquiry, the commission finds, as it did in this case, that it has sufficient evidence to act finally, nothing can be gained by thereafter wasting time and money in unnecessary investigation.

2. The report is condemned as vague and evasive. We are not impressed with that comment. The report contains thirty-five printed pages sufficiently stating the views of the commissioners for the purposes of the order made; we have no difficulty in determining that the order is supported by evidence; the concessions of counsel show the same thing.

3. Appellants contend the commission "gave undue weight to the evidence of present reproduction costs. It has confused the terms present fair value with present reproduction cost." A proper reading of the report shows that criticism is without foundation.

4. Objections are made to the force attributed to certain items of valuation; we consider them without merit on this appeal, and shall refer to only one, to the expenditure of $14,000,000 for street paving prior to the agreement of 1907. Of this, the commission said the city, in its historical studies, determined to its own satisfaction that the actual cost of this paving so laid was in excess of $14,000,000. The company claimed for the item of paving nearly $26,000,000. . . . In such cases we feel that all the company can claim to have protected is its original investment or price paid for the franchise, and we, therefore, can give no consideration to the higher figures which it is admitted the present cost of paving would reach. Appellants have no cause to complain of that; it is not unlawful to capitalize the amount paid for franchises.

5. The contract of 1907 between the city and the transit company provided: ". . . the present rates of fare may be changed from time to time, but only with the consent of the parties hereto." The city's brief now objects that "the commission entirely ignores the city's claim of the binding effect of the agreement of 1907, notwithstanding the fact that question, under the contract clause of the Constitution, was raised. . ."

We have not found where that point was raised below. On the contrary, the commission's power to make the change was expressly conceded by the city in the complaint by which this suit was begun. In its complaint the city averred: "On July 1, 1907, the company entered into a contract with your complainant, which provided, *inter alia*, that the transit company should make no change in the rates of fare which were then in force without the consent of the Councils. Your complainant avers that while your honorable commission has power to order a change in said rates irrespective of the consent of the Councils, the said transit company has no power of its own motion to make such change without the consent of the Councils, prior to the determination and specific order of your honorable commission, without violating its obligation under said contract (of 1907) . . ."

We find nothing withdrawing that; nor is there anything in the commission's report indicating any question about its power; moreover, we think the position stated in the averment was right—that the commission has the power pleaded. Without now determining that by the specific terms of its complaint and its suit before the commission the city in fact, within the meaning of the contract, consented to the change in fares ordered on its complaint, and adopted by the company, we are clear that the principles governing Leiper vs. R. R., 262 Pa. 328; Scranton vs. P. S. C., 268 Pa. 192, and White Haven Bor. vs. P. S. C., 80 Pa. Superior Court 536, and similar familiar cases, apply in this case, and that the city has not been deprived of any right under the contract.

Improved Service Promised in Springfield, Mass.

Clark V. Wood, president of the Springfield Street Railway, Springfield, Mass., has sent to Mayor E. F. Leonard a statement of the company's plans to increase service after May 1, when the jitneys, according to orders, cease service.

Mr. Wood estimates that the jitneys carry 10,000 passengers daily, of whom 33 per cent are transported in the morning rush hour, 20 per cent in the afternoon rush and 47 per cent at other times. Respecting non-rush hour traffic no additional facilities are required, he says, as cars are not now filled to their seating capacity. Nevertheless, he states that the company will provide more frequent cars on its Forest Park, Dickinson Street, State Street, Wilbraham Road and Liberty Street lines throughout the day. He also states that orders have been placed for five additional buses to be delivered before May 1. Two new bus routes are tentatively planned, and extension of the present Orange Street bus route is considered. The company's buses are operated to serve districts off the railway routes, and it is not proposed to parallel any of these routes with buses. In his statement Mr. Wood says that the company's buses are earning less than one-half the cost of their operation.

After President Wood's letter to the Mayor was published Richard J. Talbot, attorney for the Springfield Bus Owners' Association, gave out a statement saying that the proposals were "wholly inadequate to meet the traffic needs of the community."

Attorney Talbot said that a bill had been drawn and sent to Boston, to be introduced in the Legislature, ordering a stay of the Mayor's order to stop the independent bus service, until after a referendum vote could be had from the people of Springfield.

Broad Jersey Bus Plan

President McCarter Says Bus Service Will Not Be Diminished—Five-Cent Fare to Continue

Thomas N. McCarter, president of the Public Service Railway, Newark, N. J., says that if the company should acquire control of the motorized transportation system in Newark the 5-cent fare will be maintained on trolleys and buses so long as it is economically possible and there will be no curtailment of buses or bus lines. Moreover, rush-hour express service will be introduced under the proposed co-ordinated system. He also says that directors have authorized the purchase of 100 modern buses, and that negotiations have been completed for the purchase of a $300,000 plant to be used for the repairing of buses and possibly later for the building of buses.

The plans for a coordinated trolley-bus system for Newark, of which the foregoing is merely an outline, were announced on March 4 by the Public Service Railway in a letter to Commissioner Thomas L. Raymond, director of the Department of Streets and Public Improvements. The letter was signed by Mr. McCarter, and was in response to a request from Director Raymond for a statement of the company's plans.

Mr. McCarter says the plan contemplates the employment of buses and street cars in a properly co-ordinated or unified service, under a single management, so as to utilize both types of vehicles in the most efficient manner to meet in full the reasonable demands of the riding public. He is hopeful of receiving the co-operation of the people and is "confident that the consummation of such plans will redound to the public's benefit and to that of the company as well." He says that the progress of the railway during the last two months has been so encouraging that at the close of the so-called experimental period the company management made known to the Board of Public Utility Commissioners its determination voluntarily to continue the 5-cent fare now in effect. The company proposes to maintain the 5-cent fare permanently if it be economically possible.

If the law permitted, Mr. MacCarter explains, the railway would today be operating buses in a co-ordinated service with its electric cars instead of being obliged to conduct the bus end of the business through a separate corporate organization. In the development and operation of the co-ordinated bus and trolley service, there will be no diminution of service and no reduction of bus-miles operated on the Newark lines. Co-ordinated bus and trolley operation will also make possible express service where desirable during the morning and evening rush hours.

Mr. McCarter said that for weeks past he had devoted a large part of his time to the study of bus operation in other cities.

Five-Cent Fare Spells Ruin

Vice-President Hanna of Capital Traction, So Testifies—Opposed to Abolishing Commission

The establishment of the 5-cent cash, and six for a quarter rate on the lines of the Capital Traction Company, Washington, D. C., would mean ruin for the company. This statement was recently made by John H. Hanna, vice-president and general manager, before the sub-committee of the committee on the District of Columbia of the Senate, which is holding hearings on Senator McKellar's bill to abolish the District Public Utilities Commission and thereby restore the old rate of 5 cents cash, with tickets six for a quarter. The statement was made on Feb. 29 and was preceded by brief remarks by President George Hamilton, and will be followed in subsequent hearings by more detailed presentation of facts by Mr. Hanna. Mr. Hanna was the first witness on behalf of either local electric railway.

He said that in 1923 the Capital Traction Company earned a reasonable but not excessive return on the present value of its property as determined by the commission. Further that he had no reason to believe that during 1924 any higher return than this would be earned under the present rate of fare, and assuming that car riding continues to fall off during this year as it has done for the past three years, the return would certainly be less. Operating expenses had increased 175 per cent since 1914 despite the efforts to economize wherever possible, while revenue had increased only 115 per cent and fares only 63 per cent.

It was his belief that if the 5 cent, six for a quarter fare had been in effect during 1923, the other conditions remaining the same, the revenues would have failed by nearly $300,000 to meet actual costs and taxes. No income whatever would have been available for interest or other return on investments. Mr. Hanna resented the attitude of some critics by stating forcefully that the books and records of the company were always available to those vested with proper public authority.

He said that aside from the disastrous effect which the establishment of the 5-cent cash fare would have on the two railways and the service which they furnish, the proposal in the McKellar bill to take away from the commission the right to regulate fares was a serious backward step in modern government and "makes the bill of great interest and importance to all."

One-Man Cars Being Operated.—One-man cars are now being used exclusively on the lines of the Morris County Traction Company, Morristown, N. J.

Bus Fares Increased.—The Pennsylvania-Ohio Traction Company, Youngstown, Ohio, has announced an increased fare on its bus lines. The fare from Youngstown to Warren, which was 45 cents, has been raised to 50 cents, while the fare from Youngstown to Niles, which was 30 cents, was increased to 40 cents. The Youngstown-Girard fare, formerly 20 cents, was boosted to 25 cents.

Ten-Cent Fare Adopted.—The Fitchburg-Leominster Street Railway, operating lines in central Massachusetts, has adopted a flat 10-cent rate on all lines. The six-ride ticket for 30 cents will be discontinued.

Five Cents for Short Rides.—The new Gardner & Templeton Street Railway, operating between Gardner and Templeton, Mass., has instituted a 5-cent fare rate for short rides as a means of meeting competition by the buses. As a result of the departure, receipts are said to have been increased from 15 to 25 per cent.

Parking Ordinance Introduced.—An ordinance to abolish parking on several important downtown thoroughfares of St. Louis was recently introduced by Director of Streets and Sewers Clinton H. Fisk. The measure was given to the Board of Aldermen on Feb. 15. Because automobiles have been parked along the sides of narrow streets it has been impossible for more than one line of traffic to move in the same direction at the same time. Electric railway transportation has been retarded and thousands of persons have been inconvenienced.

Award Made to Distinguished Service Members.—Fourteen employees of the Birmingham Railway, Light & Power Company, Birmingham, Ala., are gold button men, who had highly satisfactory records for 1922 and 1923, for which they received the gold buttons. Another group of seventy-five men received bronze distinguished buttons for the first six months of 1923 and made a satisfactory record for the second six months of 1923, and are now entitled to receive the silver distinguished service buttons. Still another group in the distinguished service class for 1923 made a satisfactory service record for the last six months of 1923 and have been awarded the bronze distinguished service buttons.

Hours for Use of Tickets Stipulated.—A new regulation governing the sale and use of individual school commutation tickets on the lines of the Chautauqua Traction Company and the Jamestown, Westfield & Northwestern Traction Company, both in Jamestown, N. Y., provides that they will be honored for transportation between the hours of 7:30 a.m. and 5 p.m. only, effective March 21. At present there are no limits as to hours.

Extension of Time Allowed on Fare Changes.—The California Railroad Commission has granted an extension of time until April 4, 1924, to the Key System Transit Company in which to eliminate the discrimination in the matter of interurban fares between San Francisco and the city of Piedmont, which the commission found to be discriminatory as compared with other East Bay municipalities. Reference was made to the matter in the ELECTRIC RAILWAY JOURNAL, issue of Feb. 16.

Wants Operations Limited.—The Salt Lake & Utah Railroad has applied to the Public Utilities Commission of Utah for a modification of the franchise granted to the Butters & Speers Company to limit their operations to a freight line between Magna and Garfield, Utah. At present the company has a franchise to operate between Salt Lake City and Garfield. Besides denying the public convenience or necessity for a service other than that given by the railroad between Salt Lake City and Magna, the railroad alleges that the recently formed company is violating the minimum schedule on individual shipments and also that it is charging rates other than those on file with the commission.

Railway Men Invited to Criticise Traffic Plan.—C. E. Smith, consulting engineer for the city of St. Louis, has invited Col. A. T. Perkins, general manager for the United Railways, St. Louis, members of the City Plan Commission, the Board of Public Service and others interested in traffic to express themselves concerning the plan he has advanced for solving some of the city's traffic problems. Mr. Smith's plan includes the development of two new east and west traffic ways, with separated roadways at busy crossings of other streets just north and south of the present congested east and west streets. The plan consists of widening and connecting present streets, the improvements on the greater portions of which, in Mr. Smith's opinion, are backward by reason of having been partly deserted by former users and not yet fully developed for new use.

Cars Operating Over New Viaduct.—The new steel and concrete viaduct spanning the railroad tracks and Cherry Creek on Sixteenth Street, Denver, Col., has been completed. The Denver Tramway is now operating about a dozen routes over the viaduct. Since the old wooden structure was torn out, the trams have been forced to use the tracks at the street level and to cross about fifteen railroad tracks.

Classed with Motor Trucks. — The attorney-general's department in Wisconsin recently handed down an opinion ruling that passenger-carrying buses be placed in the class of motor trucks, and are therefore included in the provision fixing the speed limit at 20 m.p.h. on highways for heavy vehicles, under the state motor vehicle act. Buses are now being operated in Wisconsin under the state jitney law and the average speed is usually around 30 m.p.h. The opinion is the outgrowth of complaints about speeding received from bus patrons.

Advertising Brings Results.—During the past few years the United Railways has advertised extensively the Missouri Botanical Gardens, located in St. Louis, by means of signs on its cars, telling the patrons how to reach the gardens and also calling attention to the special showing of plants, etc. This campaign has undoubtedly helped to increase the popularity of the gardens, which is reflected in the attendance, now three times as large as a decade ago. Only 15 per cent of the many thousands of people who visit the gardens every year come in automobiles, according to statistics compiled by the officials of the garden. This fact was brought out in the thirty-fifth annual report for the gardens, recently made public by George T. Moore, director, and was given as one of the principal reasons why the gardens should not be moved outside the city limits. Such a move had been contemplated because of the need for more room for expansion.

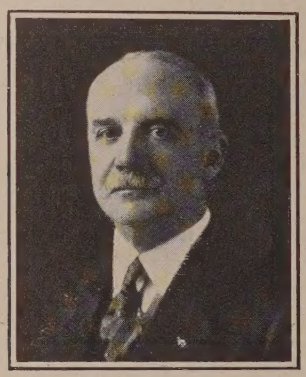
Personal Items

Messrs. Miller and Alberger Elected

Well Known Pacific Coast Executives Head Successor to Reorganized Oakland-Terminal Railways

The Railroad Commission of California recently authorized the reorganization and refinancing of the San Francisco-Oakland Terminal Railways, and the reorganization has now been effected, but the executive personnel of the corporation remains unchanged.

C. O. G. Miller is president of the successor company, as he has been since 1917 of the San Francisco-Oakland Terminal Railways and W. R. Alberger is vice-president and general manager, positions he has filled with the former company since becoming connected with the concern in 1911.



W. R. Alberger

The bondholders at a meeting in December unanimously voted to keep these two officials in their places.

Christian Otto Gorbording Miller is one of the ablest and best known financiers on the Pacific Coast. He was born in Oakland in 1865 and was educated in the Oakland public schools. As a young man, with scarcely any capital, he successfully floated a bond issue of a gas company in Los Angeles. That was thirty years ago. It marked his entrance into the utility field, in which his interest has gradually been extended since that time. Today he is president of the Pacific Lighting Corporation, the holding company for the gas concern, and a director in the Los Angeles Gas & Electric Corporation, which he helped finance.

Mr. Miller is an outstanding figure in San Francisco's world of finance. He is a director in at least twelve concerns and is vice-president of the Mercantile Trust Company and vice-president of the Realty Syndicate of Oakland.

When the affairs of the San Francisco-Oakland Terminal Railways reached a crisis on July 27, 1917, following the resignation of President G. K. Weeks, Mr. Miller was chosen president, a position which he has since continued to fill. During the war he served as the head of the San Francisco branch of the War Trade Board.

William Randolph Alberger is a veteran railroad executive. He started to learn the business as an office boy in 1876 in Buffalo, N. Y., in which city he was born. Mr. Alberger worked in several railroad offices in the East before he heeded the call of the big West and ultimately secured a berth with the Santa Fé Railroad, by which he was employed for many years. He passed through various clerkships, including several of the confidential variety, rising finally to the position of traffic manager in Oakland.

FOURTEEN YEARS WITH KEY SYSTEM

Mr. Alberger resigned from the Santa Fé to go with the Tonopah & Tidewater Railroad as traffic manager. There his capacity for hard work and his efficiency soon attracted attention. It was about this time, 1911, that the San Francisco-Oakland Terminal Railways, on the verge of being reorganized, was seeking experienced operating talent. Mr. Alberger was invited to become vice-president and general manager. Before this time Mr. Alberger had confined his duties strictly to steam lines, but he knew Oakland, he knew the Key System and some of its problems, from observation. So he accepted the offer and has since remained with the company. Under his management the company has grown to its present proportions. Twice the property has been reorganized financially, but the operating problems have been left to Mr. Alberger and have been successfully solved by him.

Four newly organized corporations all figure in the refinancing of the old corporation, namely:

Key System Transit Company, Key System Securities Company, Oakland & Hayward Railway and East Oakland Railway.

The first named will assume charge of all the properties formerly owned by the San Francisco-Oakland Terminal Railways, and the Securities Company will take the place in the reorganization of the Oakland Railways. The Key System Transit Company will be the name of the operating company. It will run under lease the railways properties of the East Oakland Railway and the Oakland & Hayward Railway.

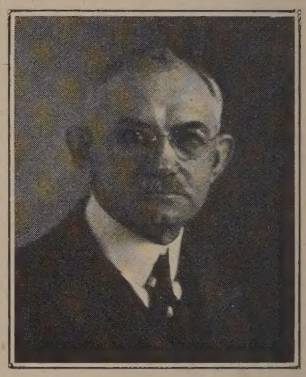
Power Station Changes in Youngstown

H. W. Bromley, formerly superintendent of power of the Pennsylvania-Ohio Electric Company, with office at Youngstown, Ohio, resigned recently to devote his time to his personal interests. He had given more than ten years service to the company. Andrew Carnegie has been appointed acting superintendent of power. F. V. Canning has been appointed assistant to Mr. Carnegie and F. C. Beattie has been appointed chief engineer of the Lowellville power generating station, succeeding Mr. Canning.

W. B. Mayo Municipal Manager

Head of Local Detroit System Looking Into Future Needs of City Difficult Problems to Solve

William Benson Mayo, general manager of the Detroit Department of Street Railways, recently reiterated to a representative of the ELECTRIC RAILWAY JOURNAL his active interest in the proposal to provide rapid transit for Detroit. He has analyzed critically the provisions contained in the report of the Rapid Transit Commission, and it is his belief that careful consideration should be given the relation between the Street Railway Commission and the Rapid Transit Commission if the latter is to become a permanent feature. He also sees the need for



W. B. Mayo

serious consideration immediately of the plans for a metropolitan area.

In Detroit Mr. Mayo has played an important part as a member of the Street Railway Commission in steering railway matters along successful lines. At the request of Mayor Frank E. Doremus of Detroit, Mr. Mayo took up the work of general manager last July after the death of former General Manager Joseph S. Goodwin left the active management of the system on the shoulders of Ross Schram, assistant general manager.

He assumed the duties as a citizen and offered his best efforts in helping the city to solve its transportation problems, with the single idea that what the citizens of Detroit desire most is the best street railway transportation regardless of the merits or demerits of public operation. Mr. Mayo's work for the public good also includes his services as a member of the board of arbitrators appointed under an agreement between the city of Detroit and the Detroit City Gas Company, dated Nov. 14, 1923, to determine what rate the company will be allowed to charge consumers of gas in the city.

In view of the fact that through years of unfortunate controversy the system taken over from the Detroit United Railway had stagnated to a great extent, the first task was that of building up a stable foundation for the municipal system. To this end Mr. Mayo has devoted his efforts unceasingly. Since 1913 Mr. Mayo has been chief engineer of the Ford Motor Company, Detroit, Mich., a position which he still holds.

Mr. Mayo was born in Chatham, Mass., on Jan. 7, 1866. He was educated in the public schools and under private instructors. For twenty-five years he was with the Hooven-Owens-Rentschler Company, manufacturers of steam engines, ten years as chief engineer and five years as vice-president and general manager.

The Detroit Athletic Club, the Detroit Club, and Engineers' Club of New York are numbered among the organizations to which Mr. Mayo belongs. He is also a member of the American Society of Mechanical Engineers, and a trustee of Antioch College.

Fred J. Miller was recently appointed a member of the Public Service Commission of Pennsylvania. He will conduct a survey of the electrical power service of the state. He is an engineer and a former president of the American Society of Mechanical Engineers.

Obituary

John F. Kent, president of the Cameron Electrical Manufacturing Company, Ansonia, Conn., died recently. Mr. Kent was seventy-four years old. He had been identified with the electrical manufacturing business of the Naugatuck Valley for more than fifty years.

Grenville S. MacFarland, attorney, editorial writer of the Boston *American* and general counsel for the Hearst interests in New England, died suddenly in Boston on Feb. 28. He had been in ill health for some time. He was graduated from Harvard in 1897. Mr. MacFarland participated freely as a commentator during the discussion of the trustee plan at Boston, under which the Boston Elevated Railway and the Eastern Massachusetts Street Railway are now operated, and also commented on the transit situation in New York for the Hylan-Hearst political interests.

Otto F. Koss, formerly superintendent of the transportation department of the St. Joseph Railway, Light & Power Company, St. Joseph, Mo., died recently. He retired from the railway property about two years ago.

F. B. Clements, secretary and auditor of the Mobile Light & Railroad Company, Mobile, Ala., died recently after a short illness. Early in 1919, when M. W. Glover resigned from the Mobile property to become auditor of the West Penn Railways, Mr. Clements succeeded him as secretary and auditor. Mr. Clements was connected with the Panama Railroad on the Isthmus of Panama for several years.

Manufactures and the Markets

News of and for Manufacturers—Market and Trade Conditions
A Department Open to Railways and Manufacturers
for Discussion of Manufacturing and Sales Matters

Westinghouse Expanding

Electric Company Plans Plant Extensions — Stock Dividend Declared — Additional Stock to Be Offered

The Westinghouse Electric & Manufacturing Company has authorized an issue of $17,955,000 common stock at $52.50 a share and a stock dividend of 10 per cent on the common. The new issue is payable April 16 to holders of record on March 17. The stock dividend is payable to holders of record May 2, and thus will be shared in by the new stock.

The directors have also declared the quarterly dividend of $1 a share on the preferred, payable April 15 to holders of record March 17, and the quarterly dividend of $1 a share on the common, both $50, par value, payable April 30 to holders of record March 17.

Figures of the company available for the ten months ended Jan. 31, 1924, indicate that the volume of business done, or sales billed, for the fiscal year will probably exceed $150,000,000. The directors are optimistic over the profits for the future. They believe that the demand for the products of the company will continue to increase and they have therefore approved plans for additional manufacturing facilities to be provided during the next two years. These plans will require not only further capital expenditures, but also additional working capital which the directors believe should be met by the sale of additional common capital stock.

The present outstanding capital stock of the company is $89,775,150. The present annual dividend requirements at the rate of 8 per cent per annum are $7,183,013. It is estimated that the net income available for dividends and other purposes for the fiscal year to end March 31, 1924, will be approximately $16,000,000. The annual dividend requirements at the present rate of 8 per cent per annum, on the amount of stock outstanding, including the amount offered for subscription and also the amount of the 10 per cent stock dividend above mentioned, will be $9,480,252.

Factory Employees Receive Unusual Recognition

A new method of giving recognition to the constructive work of factory employees has been put into effect by the General Electric Company. At the various plants of the company the managers presented certain workmen with sums of money and certificates acknowledging their contributions to the progress of the electrical industry. These awards were made by the Charles A. Coffin Foundation, which was established for the broad purpose of stimulating progress in all branches of the electrical industry.

This is said to be the first time that employees in any large industry, particularly workers in the shops, have been publicly recognized for work they have done for the industry outside their ordinary duties. Engineers and research workers have gained public distinction by their achievements, but the man in the shop, as a rule, has seldom become known to other than a few of his immediate associates.

Many Orders for Interurban Freight Cars

Orders for interurban freight cars totaling nearly $60,000 are now in process of being filled by the Inter-State Car Company, Indianapolis, Ind. The largest of these amounts to $37,000 and covers twenty-five cars ordered by the Union Traction Company of Indiana. Five 50-ft. motor car bodies are being built. Steel underframes and wooden superstructures are called for in the design. The car will have a capacity of 80,000 lb. The same railway has also ordered fifteen 40-ft. trail box cars of the same capacity. The bodies in this case also will have wooden superstructures on steel frames. Five 39-ft. stock cars are to be built with a capacity of 60,000 lb. each.

The Indianapolis & Cincinnati Traction Company has ordered five new 40-ft. box cars of 80,000 lb. capacity each. These cars will have steel underframes and steel body bolsters. Five stock cars are being completely rebuilt for the same railway. They will be equipped with steel panel center sills, with cover plate and steel end sill construction. The trucks and body bolsters will be all steel. These cars will have a capacity of 60,000 lb. each. Six stock cars are also being rebuilt for the Terre Haute, Indianapolis & Eastern Traction Company. All worn parts are to be replaced and when completed the cars will be practically new.

Metal, Coal and Material Prices

Metals—New York	March 4, 1924
Copper, electrolytic, cents per lb	13.937
Copper wire base, cents per lb	16.375
Lead, cents per lb	9.05
Zinc, cents per lb	7.05
Tin, Straits, cents per lb	55.75
Bituminous Coal, f.o.b. Mines	
Smokeless mine run, f.o.b. vessel, Hampton Roads, gross tons	$4.70
Somerset mine run, Boston, net tons	2.25
Pittsburgh mine run, Pittsburgh, net tons	2.125
Franklin, Ill., screenings, Chicago, net tons	1.95
Central, Ill., screenings, Chicago, net tons	1.725
Kansas screenings, Kansas City, net tons	2.25
Materials	
Rubber-covered wire, N. Y., No. 14, per 1,000 ft	$6.75
Weatherproof wire base, N.Y., cents per lb	18.00
Cement, Chicago net prices, without bags	$2.20
Linseed oil (5-bbl. lots), N. Y., per gal	$0.96
White lead, in oil (100-lb. keg), N.Y., cents per lb., carload lots	12 25
Turpentine, (bbl. lots), N. Y., per gal	$1.03

Exhibits Planned to Show Manufacturers' Wares

To stimulate interest and pride in local industry the Ansonia National Bank, Ansonia, Conn., has inaugurated a scheme whereby the local manufacturers are taking turns exhibiting their products at the bank.

The exhibit of the Cameron Electrical Manufacturing Company included generator and railway motor commutators, starting and ignition commutators for automobiles, trucks and buses, industrial motor commutators, drop-forged commutator segments, formed mica rings and slot insulations, armature and field coils for all types of railway and industrial motors.

Rolling Stock

Birmingham Railway, Light & Power Company, Birmingham, Ala., has announced the complete specifications on its twenty new cars. The details are as follows:

Number of cars ordered	Twenty
Date order was placed	Sept. 28, 1923
Date of delivery	April 1, 1924
Builder of car body	Cincinnati Car Company
Type of car	Semi-convertible passenger
Seating capacity	Sixty-two
Weight:	
Car body	13,800 lb.
Trucks	10,000 lb.
Equipment	10,000 lb.
Total	33,800 lb.
Bolster centers, length	32 ft. 0 in.
Length over all	49 ft. 5 in.
Truck wheelbase	4 ft. 10 in.
Width over all	8 ft. 5 in.
Height, rail to trolley base	10 ft. 8 1/16 in.
Body	All steel
Interior trim	Cherry
Headlining	Agasote
Roof	Arch
Air Brakes	Westinghouse straight air
Armature bearings	Sleeve
Axles	Steel Brill
Bumpers	Hedley
Car signal system	Electric Service Supply
Car trimmings	Brass
Center and side bearings	Brill
Control	K-35
Curtain fixtures	National lock washers
Curtain material	Pantasote
Destination signs	Hunter
Door operating mechanism	National Pneumatic
Fenders	H. B.
Gears and pinions	G. E. helical
Hand brakes	Cincinnati
Heater equipment	Consolidated
Headlight	Golden Glow
Journal bearings	M. C. B.
Journal boxes	Brill
Lightning arresters	General Electric
Motors	G. E. 265
Motors	Outside hung
Paint	Flood & Conklin
Registers	International No. 5
Sanders	Ohio Brass
Sash fixtures	Dayton 183
Seats	Slats, Cincinnati Car
Seating material	Wood
Slack adjuster	American
Springs	Brill
Step treads	Feralun
Trolley catchers	Ohio Brass 13141
Trolley base	General Electric
Trolley wheels	General Electric
Trucks	Brill 76-E-1
Ventilators	Railway Utility
Wheels	26-in. chilled iron

Department of Street Railways, Detroit, Mich., will ask bids in the near future on 100 more Peter Witt type cars.

Trenton & Mercer County Traction Company, Trenton, N. J., through its subsidiary, the Central Transportation Company, has purchased seven street car type Fageol buses and three Fageol chassis.

Track and Line

Toledo, Bowling Green & Southern Traction Company, Findlay, Ohio, will replace 2 miles of track in Bowling Green this year at a cost of $60,000.

Interstate Public Service Company, Indianapolis, Ind., is completing the installation of about 3 miles of the new steel rails between Columbus and Indianapolis. It is expected that at least 10 miles of the new steel will be put in by spring. The new rails are 80 lb., while the old rails are 60 lb.

Market Street Railway, San Francisco, Cal., during the fiscal year 1922 to 1923 started replacing the rails on all four tracks on Market Street, from Sansome Street to the ferry. The Municipal Railway is paying its prorata share of the cost. The rail used was a new section weighing 121 lb. per yard, but so designed as to fit the joint plates at the 106-lb. rail.

Godbout, Que.—The St. Regis Paper Company has completed an electric railway in and about the town of Godbout which connects the mills and the water front. It will be used largely for the transportation of pulp and paper from the mills to the wharves. The rolling stock has been purchased and operation will be started in the spring. Power will be obtained from the hydro plant of the St. Regis Paper Company, at Godbout, on the Saguenay River.

Tri-City Railway, Davenport, Iowa, will replace six blocks of trolley wire on Second Street from Scott to Pershing. Construction of new cables to support the new trolley has already progressed along several blocks of the street.

Georgia Railway & Power Company, Atlanta, Ga., is extending what is known as the McKuhn Street switch on McLendon Street to Whiteford Avenue, a distance of about 1,400 ft. at a cost of approximately $18,000. Marietta Street will also be repaved. The track is being rebuilt on Piedmont Avenue and on Pulliam Avenue.

Trade Notes

W. J. Jeandron, United States agent for the "Le Carbone" carbon brushes, has been away for six weeks visiting the Le Carbone factory in France. It is understood that he is about to introduce into the United States dry cells and primary batteries of "Le Carbone" manufacture. These batteries will have the same high standard of quality and uniformity that "Le Carbone" carbon brushes enjoy.

C. L. Hancock is the Phono-Electric sales engineer of the Bridgeport Brass Company, Bridgeport, Conn. He has been with the company since 1920. After two years in high school Mr. Hancock went to work for Westinghouse, Church, Kerr & Company in 1906. The next year he joined forces with the Westinghouse Electric & Manufacturing Company on the electrification of overhead lines. In 1908 his work had been so unusual that the attention of the railroad officials was attracted to it and he was transferred to the New York, New Haven & Hartford Railroad in charge of its overhead maintenance. In 1910 he became chief clerk of the superintendent of electric traction and for ten years increased his experiense along this line.

E. G. Best has recently been made general manager of the Eureka Company, North East, Pa., which has passed into entirely new hands. During the past eighteen years Mr. Best has been connected in an engineering and consulting capacity with several of the largest steel companies in the United States and Canada. The company will continue its production of line materials, trolley wheels, controller and commutator parts and drop forgings.

Lapp Insulator Company, Inc., Le Roy, N. Y., has placed contracts and is now at work on additions to its plant which will double the capacity, giving an equivalent of twenty-two kilns. A contract for the main factory addition, 120 ft. x 500 ft., has been placed with the Austin Company, Cleveland, Ohio, and a contract for the largest size continuous kiln has been placed with Carl B. Harrop of Columbus.

Cameron Electrical Manufacturing Company, Ansonia, Conn., at a recent meeting of its board of directors elected John B. Davidson president and treasurer. Mr. Davidson has been identified with this company as its active directing head for more than twenty-five years. He succeeds as president John F. Kent, deceased.

New Advertising Literature

E. P. Seymour Rail Grinder Company, Waltham, Mass., has just issued an interesting new circular on its "Midget" rail grinding machine. A complete description of the advantages of the machine is given in brief itemized form and several photographs illustrate its general shape and type of construction.

Crouse-Hinds Company, Syracuse, N. Y., has issued Folder No. 8, on condulets for switch and plug receptacle outlets.

Quigley Furnace Specialties Company, New York, N. Y., has issued a booklet on "Ganisand" with illustrations. Information is given to show haw ganisand is used for refractory linings including its uses for baffles, patching boiler settings, making special tile, etc.

J. W. Paxson Company, Philadelphia, Pa., has published a forty-eight-page booklet on "Sand Blast Machinery." It illustrates and describes sand blast rooms, sand blast hose machines, dust collectors, etc.

Walter A. Zelnicker Supply Company, St. Louis, Mo., has issued bulletin No. 315 on plant equipment specials.

Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa., has recently published an eight-page circular, known as C-1694, entitled "Supervisory Control." In this circular the general principles of operation and construction of both audible and visual systems of supervisory control for automatic substation are set forth.